Pelican® P

ELGIN®

OPERATORS MANUAL

PELICAN® SERIES P

OPERATORS MANUAL

Sweeper Serial Number_____

Elgin Sweeper Company
Subsidiary of Federal Signal Corporation
1300 W. Bartlett Rd.
Elgin, IL 6012-
847-741-5370

P/N 0701450-E

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Welcome to the World's Most Popular Three-Wheel Broom Sweeper - The Elgin Pelican® Series P

This manual will assist in the proper operation and care of the Elgin Pelican Series P Sweeper. It contains specific information on features and specifications, suggested operating techniques, preventive maintenance hints and instructions for making repairs and adjustments.

Read this manual carefully and completely before operating the sweeper. Working with unfamiliar equipment can lead to accidents. *Understand and follow all safety information when operating the sweeper.*

Elgin employees carefully inspected the sweeper before it left the factory. Your Elgin equipment dealer inspected the sweeper and made certain that it was in proper working order prior to delivery.

To keep the Pelican sweeper in good working condition, it is important to follow all maintenance and service schedules, including

DAILY SERVICE - After every shift or 10 hours

PERIODIC SERVICE - After each period of 50, 150, 500 or 1000 hours

Refer to the maintenance schedule in the Maintenance Section. This schedule is also displayed on the sweeper.

Keep this manual in the cab of the sweeper for reference. If a problem develops with the sweeper, your Elgin Dealer has the factory-trained service personnel, genuine Elgin parts and necessary tools and equipment to meet your specific needs.

If you should need to contact the factory regarding operation, maintenance or repair, please feel free to call Elgin at 847-741-5370.

Subsidiary of Federal Signal Corporation

LIMITED WARRANTY

Each machine manufactured by ELGIN SWEEPER COMPANY ("ESCO" or the "Company") is warranted against defects in material and workmanship for a period of 12 months provided the machine is used in a normal and reasonable manner. This limited warranty is applicable only to the original user-purchaser for a period of twelve (12) months (as measured from the date of delivery to the original user-purchaser) and is not transferable.

During the Limited Warranty Period ESCO will cause to be repaired or replaced, as the Company may elect, any part or parts of such machine that the Company's examination discloses to be defective in material or workmanship. Repairs or replacements are to be made at the selling Elgin distributor's location or at other locations approved by ESCO.

The ESCO Limited Warranty shall not apply to:

1. Major components or trade accessories such as, but not limited to, trucks, engines, hydraulic pumps and motors, tires and batteries that have a separate warranty by the original manufacturer.
2. Normal adjustments and maintenance services.
3. Normal wear parts such as, but not limited to, brooms, oils, fluids, filters, broom wire, shoe runners, rubber deflectors and suction hoses.
4. Failures resulting from the machine being operated in a manner or for a purpose not recommended by ESCO.
5. Repairs, modifications or alterations without the express written consent of ESCO, which, in the Company's sole judgment, have adversely affected the machine's stability, operation or reliability as originally designed and manufactured.
6. Items subjected to misuse, negligence, accident or improper maintenance.

NOTE The use in the product of any part other than parts approved by ESCO may invalidate this warranty. ESCO reserves the right to determine, in its sole discretion, if the use of non-approved parts operates to invalidate the warranty. Nothing contained in this warrant shall make ESCO liable for loss, injury or damage of any kind to any person or entity resulting from any defect or failure in the machine.

TO THE EXTENT LIMITED BY LAW, THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

This warranty is also in lieu of all other obligations or liabilities on the part of ESCO, including but not limited to, liability for incidental and consequential damages on the part of the Company or the seller. ESCO makes no representation that the machine has the capacity to perform any functions other than as contained in the Company's written literature, catalogs or specifications accompanying delivery of the machine. No person or affiliated company representative is authorized to alter the terms of this warranty, to give any other warranties or to assume any other liability on behalf of ESCO in connection with the sale, servicing or repair of any machine manufactured by the Company.

ESCO reserves the right to make design changes or improvements in its products without imposing any obligation upon itself to change or improve previously manufactured products.

ELGIN SWEEPER COMPANY, 1300 West Bartlett Road, Elgin, Illinois 60120, U.S.A.

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SAFETY INFORMATION

RECOGNIZE SAFETY INFORMATION

⚠ This is the safety-alert symbol. When you see this symbol on your machine or in this manual, be alert to the potential for personal injury.

Follow recommended precautions and safe operating practices.

UNDERSTAND SIGNAL WORDS

A signal word – DANGER, WARNING, or CAUTION – is used with the safety-alert symbol. DANGER identifies the most serious hazards.

This symbol and these signal words appear on the machine and in the operator's manual. Read and understand the following definitions of the signal words before operating or working on the machine.

⚠ DANGER DANGER is used to indicate the presence of a hazard which will cause severe personal injury, death, if the warning is ignored.

⚠ WARNING WARNING is used to indicate the presence of a hazard which can cause severe personal injury or death, if the warning is ignored.

⚠ CAUTION CAUTION is used to indicate the presence of a hazard which will or can cause minor personal injury, if the warning is ignored.

NOTICE NOTICE indicates installation, operation, or maintenance information which is important but not hazard-related.

CALIFORNIA PROPOSITION 65 WARNING

CALIFORNIA
PROPOSITION 65 WARNING
Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects and other reproductive harm.

Please note this warning and remember:

- Always start and operate the engine in a well-ventilated area;
- If in an enclosed area, vent the exhaust to the outside;
- Do not modify or tamper with the exhaust system.

FOLLOW SAFETY INSTRUCTIONS

Carefully read all safety messages in this manual and on your machine safety signs.

Keep safety signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from your Elgin Sweeper dealer.

Learn how to operate the machine and how to use controls properly. **Do not** let anyone operate the machine without instruction.

Keep your machine in proper working condition. Unauthorized modifications to the machine may impair function and/or safety and affect machine life.

If you do not understand any part of this manual and need assistance, contact your Elgin Sweeper dealer.

WEAR APPROPRIATE CLOTHING/PROTECTION

Wear close fitting clothing and safety equipment appropriate to the job. Exercise caution with anything that could be caught in the machinery, such as jewelry and long hair.

Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating the machine. Use caution while using a cellular telephone while operating the equipment.

Always wear appropriate protection to meet any applicable industry standard or regulations.

DRIVING THE SWEEPER

Operate the sweeper only when all guards are fitted and in their correct position.

Before moving the machine, check the immediate vicinity of the machine for bystanders. Use the horn as a warning immediately before moving the machine.

For speeds over 25 mph (40 km/h), the sweeper must be operated from the primary driving position (left-hand or right-hand) that is standard in the country where you are driving. Operating at these speeds from the other driving position can result in severe injury or property damage. While the driver is changing driving position, the sweeper must be stopped with the gearshift in neutral and the parking brake applied.

HANDLE FUEL SAFELY — AVOID FIRES

Handle fuel with care. It is highly flammable. Do not refuel the machine while smoking or when near open flame or sparks.

Always stop the engines before refueling the machine. Fill the fuel tank outdoors.

Prevent fires by keeping the machine clean of trash, grease, and debris. Always clean up spilled fuel.

AVOID CONTACT WITH MOVING PARTS

Everyone must be clear of the sweeper before the engine is started and before the brooms are started.

Many moving parts, such as the side brooms, cannot be completely shielded, due to their function. Stay clear of these moving elements during operation.

Keep hands, feet, and clothing away from power driven parts.

AVOID MACHINE INSTABILITY

Parking brake must be set before raising or tilting the hopper.

If applicable, make sure the hopper door is open before the hopper is raised or tilted.

Raise or tilt the hopper only when the sweeper is parked on firm, level surfaces.

Lower the hopper to transport position before moving the machine.

PARK SWEEPER SAFELY

Set the parking brake, turn off the engine, and remove the keys.

Be sure the hopper is down before leaving the sweeper.

AVOID OVERLOADS

Observe the maximum permissible axle loads and total weights.

AVOID ELECTRICAL POWER LINES

Do not raise the hopper while under power lines.

Do not raise the hopper while under trees, bridges, etc.

Lower the hopper to transport position before moving the machine.

PRACTICE SAFE MAINTENANCE/REPAIRS

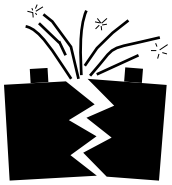
Keep the area clean and dry. Remove any build-up of grease, oil, or debris.

Never lubricate or service the machine while it is moving. Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts.

Make sure all maintenance and repairs are completed by qualified and authorized personnel. All applicable industry standards and practices and regulations must be followed during maintenance and repairs.

Make sure the parking brake is set, before you do any work on the sweeper.

PREVENT BATTERY EXPLOSIONS



Battery gas can explode. Keep sparks and flames away from batteries. If battery electrolyte level must be checked, use an electric light.

Never check battery charge by placing a metal object across the posts. Use a voltmeter or hydrometer.

Always remove the grounded (–) battery cable first and connect it last.

Do not charge a frozen battery; it may explode. Warm the battery to 60° F (16 °C).

AVOID OVERLOADING ELECTRICAL SYSTEM

Before modifying, adding, removing, etc. any electrical/electronic component(s), verify that the circuitry and components do not overload the electrical system.

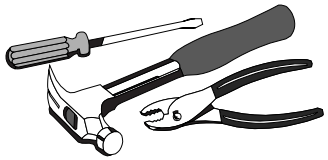
Contact your Elgin Sweeper dealer, if you have any questions or need assistance.

AVOID HIGH PRESSURE FLUIDS

Escaping fluid under pressure can penetrate the skin, causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other high pressure lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids. If accident occurs, seek immediate medical attention.

Keep hands and body away from pinholes and nozzles which eject fluids under high pressure.

USE PROPER TOOLS



Use tools appropriate to the work. Makeshift tools and procedures can create safety hazards.

Use power tools only to loosen threaded parts and fasteners.

For loosening and tightening hardware, use the correct size tools. DO NOT use U.S. measurement tools on metric fasteners, or vice versa. Avoid bodily injury caused by slipping wrenches.

Use only service parts meeting Elgin Sweeper specifications.

TIRES AND RIMS

An inflated tire and rim can be very dangerous if improperly used, serviced or maintained. To avoid serious injury, never attempt to re-inflate a tire which has been run flat or seriously underinflated without first breaking down the tire and wheel assembly for inspection. Do not attempt to add air to tires or replace tires or wheels without first taking precautions to protect persons and property. For details see the regulations of the Occupational Safety and Health Administration (OSHA).

Never use a ring or other rim parts of different manufacture or any different size or type than original rims.

OBSERVE ENVIRONMENTAL PROTECTION REGULATIONS

Be mindful of the environment and ecology.

Before draining any fluids, find out the correct way to dispose of them.

Observe the relevant environmental protection regulations when disposing of oil, fuel, coolant, brake fluid, filters, and batteries.

PELICAN P SAFETY LABELS - PART ONE

(At sun visors)

⚠ CAUTION

Turning both steering wheels at the same time will damage the steering system.	**Exceeding 2500 + 50 RPM can damage the hydrostatic drive system.**	**Overloading the hopper can cause personal injury or damage to the sweeper.**
Use only one wheel to steer at any time.	Do not exceed the recommended 2500 RPM engine speed.	Dump hopper frequently when loading heavy materials.
To avoid possible injury or property damage, *read the operator's manual* before using this machine.	**Refer to maintenance chart for daily and scheduled servicing.**	**Maintenance and repairs must be done by authorized personnel only.**

(Inside the cab)

⚠ WARNING

The operator may not be able to see directly in front of machine, and operating with people in front of sweeper can cause severe injury or death.

Ensure that area in front of machine is clear before and while moving forward. Properly adjust front 6" round convex mirrors before operating and monitor them for people outside of your direct field of vision.

Refer to Elgin Sweeper Tech Tip #0713074

(Inside the cab)

⚠ WARNING

The operator may not be able to see directly in front of machine, and operating with people in front of sweeper can cause severe injury or death.

Ensure that area in front of machine is clear before and while moving forward. Properly adjust front 6" round convex mirrors before operating and monitor them for people outside of your direct field of vision.

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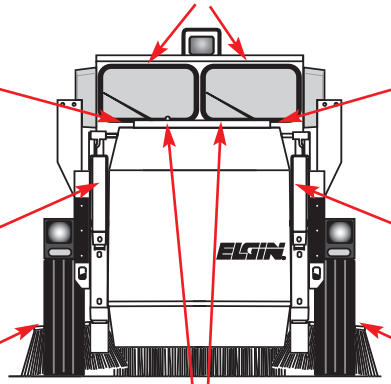

⚠ CAUTION

Towing with hubs engaged will damage hydrostatic drive.

Set park brake, Remove 2 bolts & reverse cap for disengagement at both hubs. Release park brake before towing vehicle.

Max. tow speed not to exceed 20 MPH.

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Towing with hubs engaged will damage hydrostatic drive.

Set park brake, Remove 2 bolts & reverse cap for disengagement at both hubs. Release park brake before towing vehicle.

Max. tow speed not to exceed 20 MPH.

⚠ CAUTION

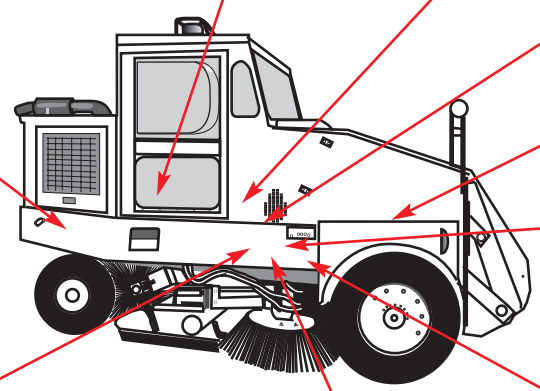
Before operating this machine, *read the operator's manual and operator's instructions* on the sun visor.

(Inside the cab)

No Step

No Step

PELICAN P SAFETY LABELS - PART TWO



NOTICE

Replace the guide wheel pivot pin (1001729) when servicing the guide wheel assembly as a result of impact damage. (Examples of impact damage might be, but not limited to: Bent rim, tire damage, axle damage, etc.) Contact Elgin dealer with any questions.

(On base of seat)

NOTICE

Tire Inflation Data

Front:	
10.00-20	Load Range F (Tube)
10.00-20	Load Range G (Tube)
11R22.5	Load Range G (Tubeless)
Rear:	
8.25-15	Load Range F (Tube)
7.50-15	Load Range H (Tube)
9R17.5HC	Load Range H (Tubeless)

Maximum Rim Pressure (Tube)
Maximum Rim Pressure (Tubeless)

(On both sides of sweeper)

No Step

(On both sides of dual sweeper only)

No Step

(On both sides of sweeper)

No Step

(On inner surface of RH cover)

NOTICE

Replace the guide wheel pivot pin (1001729) on a 5000 hr interval, or every 5 years (whichever occurs first), or when servicing the guide wheel as a result of impact damage.

(Behind RH cover)

⚠ WARNING

Moving Parts. Contact can cause severe injury.

Do not attempt repairs or go underneath machine with engine(s) running. Use extreme care when making checks or adjustments that require the engine(s) to be running.

To avoid possible injury or property damage, *read the operator's manual* before using this machine. Maintenance and repairs must be done by authorized personnel only.

Maintenance Chart on inner surface of RH cover

⚠ CAUTION

Rotating Broom. Can cause personal injury.

Do not step on side broom while rotating or at rest.

(On both sides of dual sweeper only)

PELICAN P SAFETY LABELS - PART THREE

(At radiator)

⚠ WARNING

Rotating Fan.
Can cause severe injury.

Keep clear of fan at all times. Disconnect battery before servicing.

Slow Moving Vehicle

WARNING

THIS VEHICLE IS EQUPPED WITH A BACKUP ALARM

ALARM MUST SOUND WHEN BACKING

IT IS THE DRIVER'S RESPONSIBILITY TO OPERATE THIS VEHICLE SAFELY BE SURE BACKUP ALARM IS OPERATING

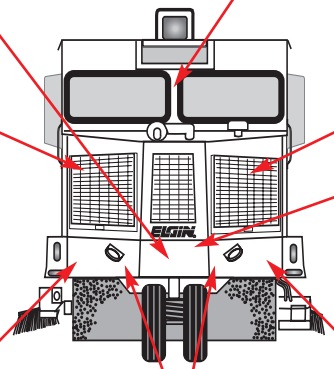
(Inside cab)

(At radiator)

⚠ WARNING

Rotating Fan.
Can cause severe injury.

Keep clear of fan at all times. Disconnect battery before servicing.



NOTICE

Lubricate sprung guide wheel strut daily with lithium base grease #2.

⚠ WARNING

Moving Parts.
Contact can cause severe injury.

Do not attempt repairs or go underneath machine with engine(s) running. Use extreme care when making checks or adjustments that require the engine(s) to be running.

To avoid possible injury or property damage, *read the operator's manual* before using this machine.
Maintenance and repairs must be done by authorized personnel only.

⚠ CAUTION

Towing with hubs engaged will damage hydrostatic drive.

Set park brake, Remove 2 bolts & reverse cap for disengagement at both hubs. Release park brake before towing vehicle.

Max. tow speed not to exceed 20 MPH.

⚠ WARNING

Moving Parts.
Contact can cause severe injury.

Do not attempt repairs or go underneath machine with engine(s) running. Use extreme care when making checks or adjustments that require the engine(s) to be running.

To avoid possible injury or property damage, *read the operator's manual* before using this machine.
Maintenance and repairs must be done by authorized personnel only.

DESCRIPTION

ELGIN PELICAN® Series P Sweeper

efficiently cleans large, paved areas, such as streets and parking lots. It can be equipped with a broom on each side to increase total sweeping path. Side brooms also help to bring debris out of the gutter and onto the conveyor.

PRINCIPLES OF OPERATION

WHY SWEEP?

Street sweeping is an essential part of sanitation. In health, ecology and aesthetics, the community benefits from clean streets. Clean streets reduce dust and dust-borne contaminants, bacteria from decomposition of organic matter, pollutants entering stormwater systems and accidents due to debris in the roadway. Community pride is enhanced by a clean environment. People are less likely to litter in a clean area. Tourists have a positive first impression of the community, which may encourage them to stay longer and return more often.

MECHANICAL/BROOM SWEEPERS

Mechanical, or broom, sweepers remove debris by sweeping it onto a conveyor. The conveyor carries the debris to a hopper. The No-Jam™ hopper conveyor of Elgin Pelican was originally patented. This revolutionary design sweeps debris up onto the conveyor, eliminating the problems of jamming.

PELICAN

The Pelican is the world's most popular sweeper. This three-wheel design is flexible enough to get into tight corners and around parked cars, yet capable of picking up large objects, such as branches, hub caps and bottles. When the hopper is full, the Pelican hopper dumps straight ahead into a dump truck or onto the ground. This straight ahead approach uses only one lane, to avoid blocking traffic.

WATER SPRAY

A water spray system controls dust during sweeping. Nozzles spray water at the front edge of each side broom to moisten the dust being swept by the brooms.

The amount of water is adjustable through use of a knob inside the cab. A 180-gallon (681 L) water tank is standard on the Pelican P, with an optional 40-gallon (151 L) tank available.

BROOMS

Hydraulically-driven brooms sweep the debris on the street onto the conveyor. The main broom is located behind the lower edge of the conveyor and directs the debris toward the conveyor. Side brooms are available on both the right and left sides. For sweeping these are lowered and rotated to move gutter debris to the conveyor.

The pattern that the brooms produce when the sweeper is stationary is a tool to evaluate the most efficient positioning of the brooms. The brooms can be adjusted to produce the best pattern and result.

CONVEYOR

The heavy-duty, multi-ply reinforced No Jam™ debris conveyor (Figure D-1) transports debris

Pelican P conveyor system
Figure D-1

deposited on it by the main broom to the hopper. Speed is in-cab controlled for variable forward and reverse.

Pavement contact is maintained by rubber dirt shoes on the sides and rubber deflectors under the chassis.

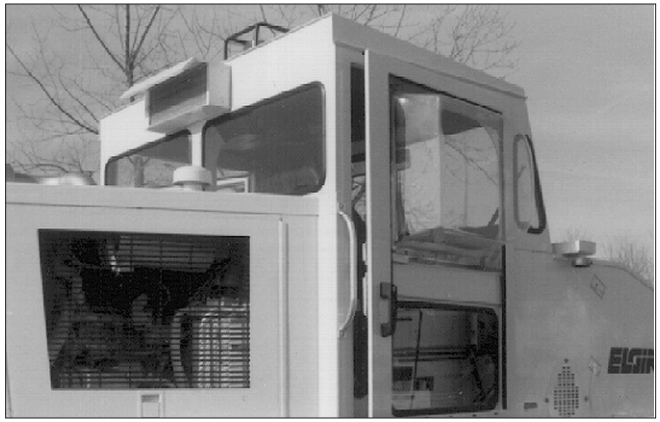
HOPPER

Debris is collected in the 3.5 yd^3 (2.7 m^3) volumetric capacity hopper. The forward dumping hopper allows dumping to occur using only one lane of traffic. The dumping height is variable up to 9 ft 6 in. (2895 mm).

After dumping the hopper should be washed down for maximum efficiency and long life.

CAB

Visibility is a full 360° in the cab of the Pelican P (Figure D-2). The bubble windows on each door, a full-width windshield and rear windows allow the operator to see everything that is happening while sweeping.



360° Visibility
Figure D-2

CONTROLS

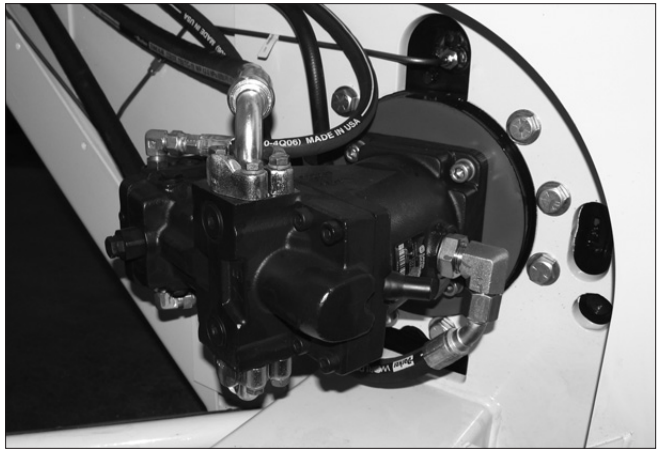
All sweeping functions, including brooms and hopper, are powered through in-cab controls (Figure D-3), located comfortably within reach.

For a complete description of all controls, see the Operations Section.

Pelican P in-cab controls
Figure D-3

DRIVE WHEELS

The Pelican P features a unique wheel motor design (Figure D-4) to provide power to handle all road conditions include steep grades. Sensors adjust the power required according to the load.



Drive Wheel Motor
Figure D-4

GUIDE WHEEL

The rear, dual-tire, guide wheel (Figure D-5) allows superior maneuverability to get around parked cars and tight corners.

An optional sprung guide wheel increases operator comfort and decreases stress on the sweeper. The 4-spring suspension absorbs shock and is especially important in areas with a number of potholes.

Optional Sprung Guide Wheel
Figure D-5

GENERAL DATA

General Specifications

Wheel base .....127.4 in (3236 mm)
Overall length .....15 ft 10 in (4826 mm)
Overall height .....9 ft 7 in (2921 mm)
Overall width .....8 ft 6 in (2591 mm)
Turning radius (sweeping)....15 ft (4572 mm)

Brooms

Side broom diameter .....36 in (914 mm)
Main broom diameter.....35 in (889 mm)
Main broom length .....66 in (1676 mm)

Hydraulic system

Pump .....Variable displacement
Motor.....Variable displacement
Filter, return .....10 micron, full-flow with bypass
Reservoir capacity.....28 gal (106 L)
Refill capacity.....35 gal (132.5 L)

Conveyor

Type .....Multiple ply reinforced rubber belt
Speed .....Variable with engine RPM

Fuel tank capacity

Standard.....35 gal (132.5 L)

Water system

Tank capacity .....180 gal (681 L)
Filter .....100 mesh screen
Spray nozzles Atomizing, adjacent to each broom
Fill hose length.....16 ft 8 in (5.1 m) with coupling

Washdown.....Integral cascade hopper /conveyor wash
Pump .....Centrifugal, 5 GPM (19 LPM) at 40 PSI (2.8 bar)

Sweeping paths

One side broom.....8 ft (2438 mm)
Two side brooms ..... 10 ft (3048 mm)

Debris Hopper

Maximum dump height.....Up to 9 ft 6 in (2895 mm)
Dumping clearance height....16 ft (4877 mm)
Design lift capacity .....9,000 lb (4,080 kg)
Volumetric capacity.....3.5 yd^3 (2.7 m^3)
Material volume .....3 yd^3 (2.3 m^3)

Engine

John Deere Diesel 4045TF150

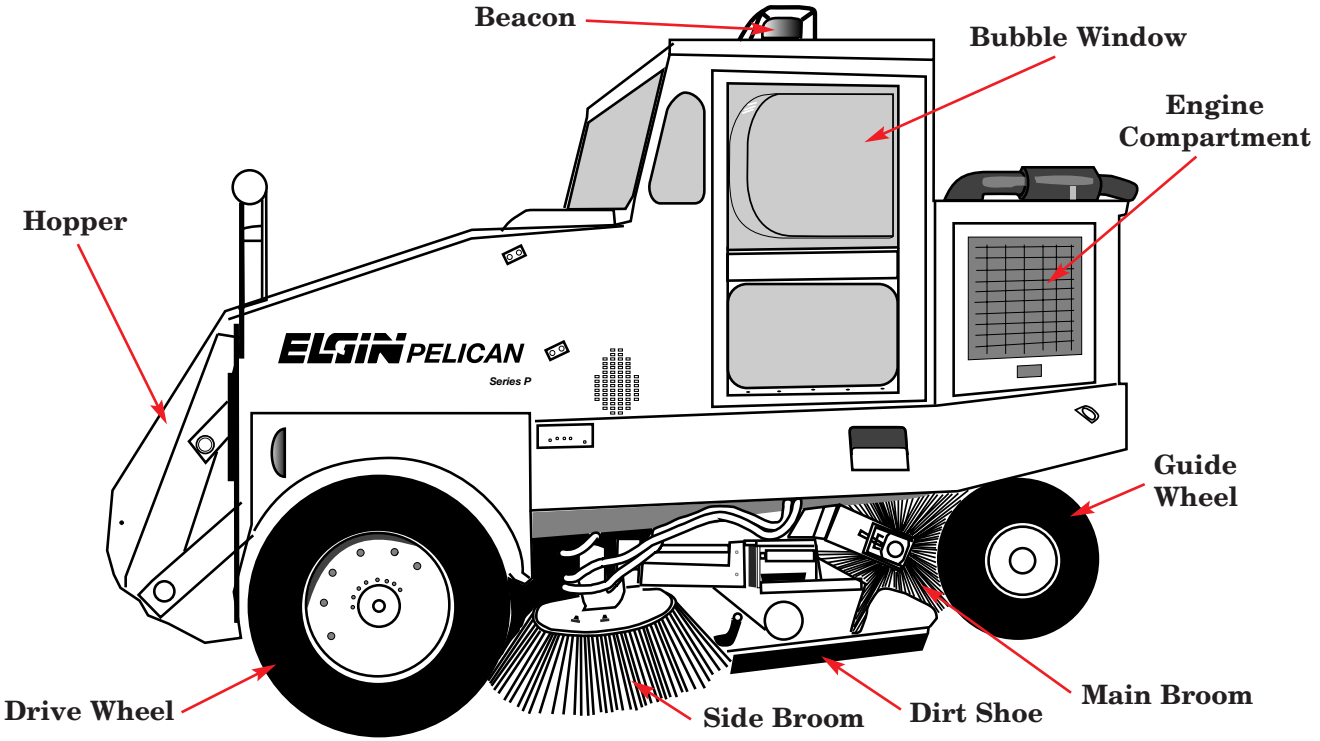
Cylinders 4
Displacement .....276 in^3 (4.5 L)
Horsepower.....99 HP (74 kW) at 2500 RPM
Torque .....274 lb-ft (372 Nm) at 1400 RPM
Compression Ratio 17:1
Bore .....4.19 in (106.43 mm)
Stroke .....5.0 in (127 mm)

Electrical system

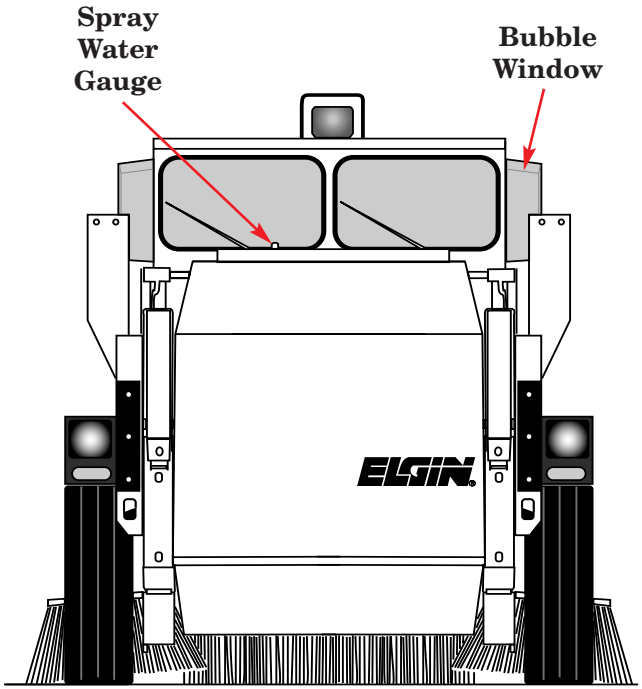
Alternator.....105 amp standard
Battery.....12 volt, group 31, 925 CCA

Tires

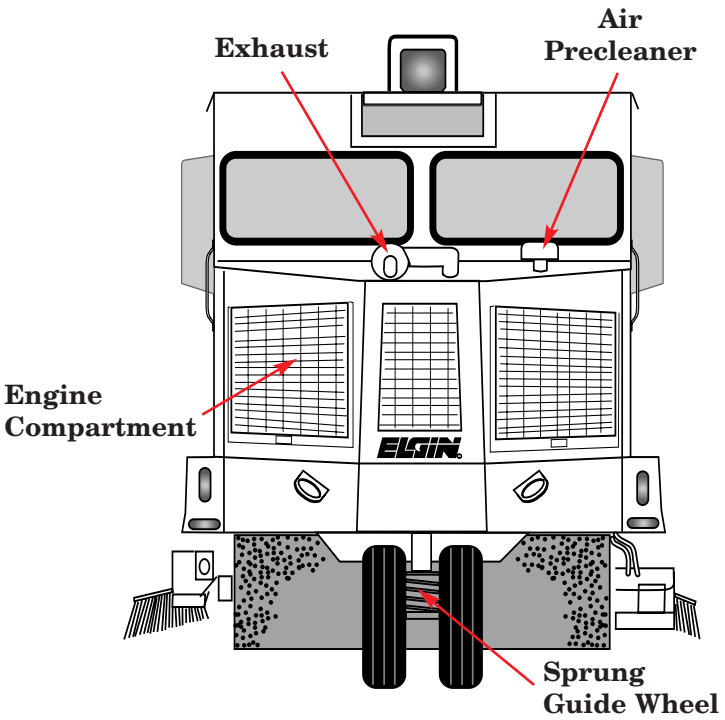
Front .....11R22.5 14 ply (2)
Rear .....9R17.5 16 ply (2)



Pelican P Side View
Figure D-6



Pelican P Front View
Figure D-7



Pelican P Rear View
Figure D-8

OPERATION

Before operating the Elgin Pelican P, be certain that you have read and understand all safety and operation information. If you have any questions, contact your supervisor before proceeding.

INSTRUMENTS & CONTROLS

The numbers below refer to those indicated on Figures O-1 and O-2.

1. **Parking Brake On** indicator - Indicates that the parking brake is applied.

2. **Restricted Air Filter** indicator - Indicates that the engine air filter is clogged and in need of service.

3. **Restricted Hyd. Filter** indicator - Indicates that one of the return filters at the hydraulic fluid reservoir is clogged and in need of service.

4. **Restricted Drive Filter** indicator - Indicates that the hydraulic fluid filter for the hydrostatic drive is clogged and in need of service.

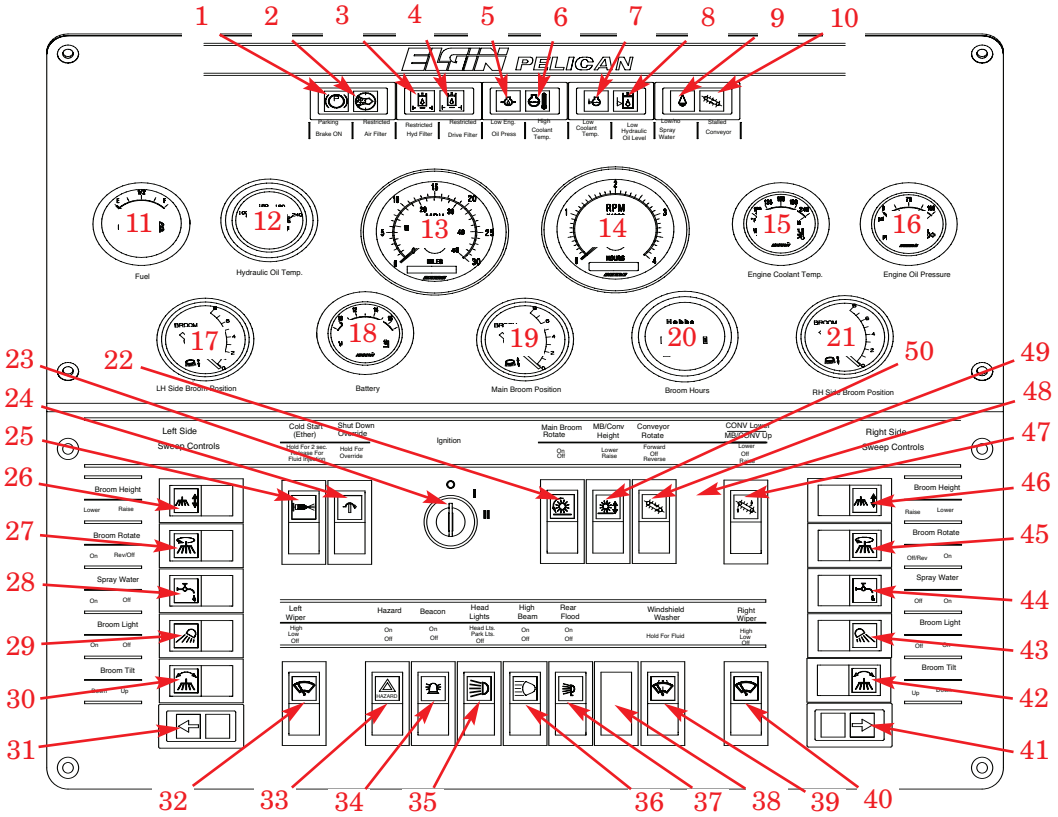
5. **Low Eng. Oil Press.** indicator (optional) - Indicates that the pressure of lubricating oil in the engine is too low for safe operation.

6. **High Coolant Temp.** indicator (optional) - Indicates that the temperature of the engine coolant is too high for safe operation.

7. **Low Coolant Level** indicator (optional) - Indicates that the level of engine coolant is too low for safe operation.

8. **Low Hydraulic Oil Level** indicator (optional) - Indicates that the level of fluid in the hydraulic system is too low for efficient operation.

9. **Low/No Spray Water** indicator (optional) - Indicates that the supply in the water tank has been nearly or completely used up.



Control Console
Figure O-1

10. **Stalled Conveyor** indicator (optional) - Indicates that the conveyor belt is not moving when power is applied to the conveyor motor.

11. **Fuel** gauge - Indicates the quantity of fuel remaining in the fuel tank.

12. **Hydraulic Oil Temp.** gauge - Indicates the temperature of hydraulic fluid in the reservoir.

13. **MPH / MILES** - Speedometer indicates sweeper speed, and the odometer records distance travelled.

14. **RPM X 1000 / HOURS** - Tachometer indicates speed of the engine. After initial start-up idling, the hour meter records engine running hours.

15. **Engine Coolant Temp.** gauge - Indicates the temperature of coolant at the engine.

16. **Engine Oil Pressure** gauge - Indicates oil pressure at the engine.

17. **LH Side Broom Position** gauge (optional) - Indicates vertical position of the left side broom on units equipped with a left side broom.

18. **Battery** gauge - Indicates battery voltage.

19. **Main Broom Position** gauge (optional) - Indicates if the main broom is up or down.

20. **Broom Hours** meter (optional) - Records total time the main broom has operated.

21. **RH Side Broom Position** gauge (optional) - Indicates vertical position of the right side broom on units equipped with a right side broom.

22. **Main Brm Rotate** switch - Indicates oil pressure at the engine.

23. **Ignition** key switch - Switches the electrical system (position I) or the starter (position II) on or off.

24. **Shut Down Override** switch (optional) - The automatic engine shutdown feature protects against damage from high coolant temperature or low oil pressure. In a sweeper with this feature, depress this switch while starting the engine.

25. **Cold Start (Ether)** switch (optional) - Under cold weather conditions, depressing this optional switch while holding the Ignition switch in the start (II) position will release ether to aid in starting. Note: A full ether bottle must be installed before using this switch.

26. **Left Side Broom Height** switch (optional) - Lowers or raises the optional left side broom.

27. **Left Side Broom Rotate** switch (optional) - Switches the optional left side broom motor on or off.

28. **Left Side Spray Water** switch (optional) - Switches spray water on or off at the optional left side broom.

29. **Left Side Broom Light** switch (optional) - Switches the light on or off at the optional left side broom.

30. **Left Side Broom Tilt** switch (optional) - Adjusts the side-to-side angle of the optional left side broom.

31. Left turn signal

32. **Left Wiper** switch - Switches the left-hand windshield wiper on or off.

33. **Hazard** switch - Switches hazard lights on or off.

34. **Beacon** switch (optional) - Switches optional beacon on and off.

35. **Head Lights** switch - Three-position switch that switches headlights and parking lights on or off.

36. **High Beam** switch - Switches the high beam of the headlights on or off.

37. **Rear Flood** switch (optional) - Switches the optional rear floodlight on or off.

38. Not used

39. **Windshield Washer** switch - Operates the windshield washer.

40. **Right Wiper** switch - Switches the right-hand windshield wiper on or off.

41. Right turn signal

42. **Right Side Broom Tilt** switch - Adjusts the side-to-side angle of the right side broom.

43. **Right Side Broom Light** switch - Switches the light on or off at the right side broom.

44. **Right Side Spray Water** switch - Switches spray water on or off at the right side broom.

45. **Right Side Broom Rotate** switch - Switches the right side broom motor on or off.

46. **Right Side Broom Height** switch - Lowers or raises the right side broom.

47. **CONV LOWER / MB/CONV UP** switch (optional) - Installed only on sweepers with hydraulic main broom suspension, the switch lowers only the conveyor, but it raises the main broom and conveyor together.
This switch is used to return the main broom and conveyor to transport position.

48. Not used

49. **Conveyor Rotate** switch - Three-position switch that starts or stops the conveyor and controls forward or reverse rotation.

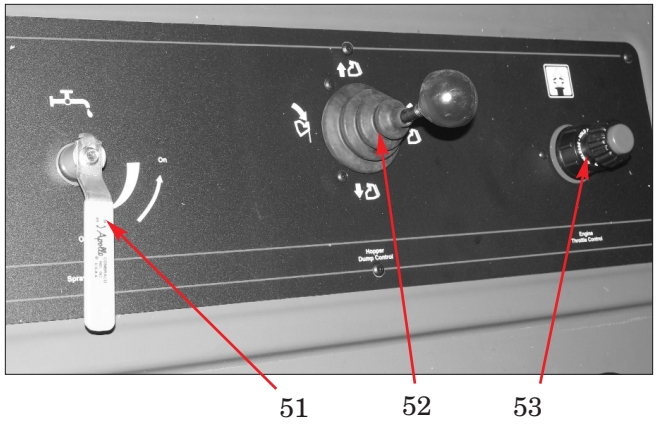
50. **MB / Conv Height** switch- Lowers the main broom and conveyor together.
On sweepers with standard main broom suspension, the switch also raises the main broom and conveyor together.

On sweepers with hydraulic main broom suspension, once the conveyor is fully lowered to sweep position, the switch raises or lowers the main broom with no effect on conveyor position.
This switch is used to begin sweeping, set the main broom pattern, and adjust the pattern during sweeping.

51. **Spray Water** valve - Allows the amount of spray water to be regulated according to the sweeping conditions.

52. **Hopper Dump Control** - Lever controls the motion of the hopper.

53. **Engine Throttle Control** - Knob controls speed of the engine.



Lowest Panel Of Control Console
Figure O-2

OPERATING CHECKLIST

Successful operation of the Pelican P depends on the following standard daily procedures.

Before Starting Engine

ENGINE

- Check engine oil level.
- Check radiator coolant level.

• Check battery fluid level (if applicable).

NOTICE

Use #1 or #2 diesel fuel only.

• Check fuel tank. Fill, if necessary. Filling the tank at the end of the shift will prevent condensation in the tank as moist air cools.
• Clean engine pre-cleaner (if applicable).
• Drain the water separator on the fuel filter.
• Check hydraulic oil reservoir level.

LIGHTS, MIRRORS, TIRES

• Check directional and safety lights.
• Check backup alarm.
• Check tires for correct pressure, according to tire manufacturer.
• Check mirrors for visibility. As instructed at Transport , make sure convex mirrors at front of sweeper give full field of vision.

SPRAY WATER

•Check spray water filter.
• Fill water tank after flushing hydrant. Flush hydrant before connecting to fill hose to remove impurities in the water. Fill to overflowing. Close hydrant **slowly** to prevent damage to hydrant.

SWEEPING COMPONENTS

• Check dirt shoes and dirt deflectors for wear and for proper adjustment.
• Check main broom for wear.
• Check side brooms for wear.
• Check conveyor for wear and alignment.

After Starting Engine

• Check sweeping patterns of side broom(s) and main broom.
• Operate water spray system and check for correct spray pattern at side broom and main broom nozzles.
• If indicator shows restricted air flow to engine, clean air cleaner and install new filter elements.
• Cycle and check all other sweeping functions.

STARTING THE ENGINE

⚠ WARNING

Whenever possible, start and operate engine in a well-ventilated area. If in an enclosed area, vent the exhaust to the outside. DO NOT modify or tamper with the exhaust system.

NOTICE

If sweeper must be operated at temperatures below freezing, see COLD WEATHER STARTING.

1. Make sure parking brake is engaged.

2. If the unit is equipped with the optional automatic shutdown feature to protect from damage due to high coolant temperature or low oil pressure, depress the Shut Down Override switch (24, Figure O-1) while starting the engine.

NOTICE

Never operate the starter for more than 10 seconds. Longer operation will lead to an over discharge of the batteries, as well as starter seizure. Wait at least 30 seconds between attempts to start the engine.

3. Start the engine by turning the Ignition switch (23) clockwise as far as it will go. Hold the switch in that position until the engine begins running, but no longer than 10 seconds. If the engine fails to start within 10 seconds, wait at least 30 seconds before trying again.

4. Allow the engine to warm up at normal idling speed of 1000 rpm. To raise RPM, depress the button on the Engine Throttle Control (53, Figure O-2) to release the lock, and pull the throttle knob up. For fine tuning, rotate the control clockwise or counterclockwise.

5. Check the Engine Oil Pressure and Fuel gauges (16 and 11, Figure O-1) to be sure there are no problems.

COLD WEATHER STARTING

⚠WARNING

Whenever possible, start and operate engine in a well-ventilated area. If in an enclosed area, vent the exhaust to the outside. DO NOT modify or tamper with the exhaust system.

NOTICE

If operating the sweeper in temperatures below 32°F (0°C), any water in the system will freeze.

Operation in temperatures below freezing may require use of the optional cold weather starting kit. If the sweeper is equipped with this feature, proceed as follows:

1. Verify that a full ether bottle is installed.

2. Make sure the parking brake is engaged.

NOTICE

Never operate the starter for more than 10 seconds. Longer operation will lead to an over discharge of the batteries, as well as starter seizure. Wait at least 30 seconds between attempts to start the engine.

3. If unit is equipped with the optional automatic shutdown feature to protect from damage due to high coolant temperature or low oil pressure, depress the Shut Down Override switch (24, Figure O-1) while starting the engine.

4. Hold the Ignition switch (23) in the starting position until the engine starts, but no longer than 10 seconds. While holding the Ignition switch in the start (II) position, press the Cold Start switch (25). If the engine fails to start within 10 seconds, wait at least 30 seconds before trying again.

5. If the engine is coughing, press the Cold Start switch again. The switch will not be operational if the engine speed is more than 500 rpm.

6. Allow the engine to warm up at normal idling speed of 1000 rpm. To raise RPM, depress the button on the Engine Throttle Control knob (53, Figure O-2) to release the lock, and pull the knob up. For fine tuning, rotate the knob clockwise or counterclockwise.

7. Check the Engine Oil Pressure and Fuel gauges (16 and 11, Figure O-1) to be sure there are no problems.

TRANSPORT

⚠WARNING

The operator may not be able to see directly in front of machine, and operating with people in front of sweeper can cause severe injury or death.

Ensure that area in front of machine is clear before and while moving forward. Properly adjust front round convex mirrors before operating and monitor them for people outside of your direct field of vision.

⚠WARNING

With dual steering — Turning both steering wheels at the same time will cause unpredictable steering. To prevent serious injury or death, use only one steering wheel at a time to steer the sweeper.

⚠CAUTION

If the operator has not operated a vehicle with rear-wheel steering, the operator must practice driving the Pelican in a non-congested, open area until totally familiar with the steering.

⚠CAUTION

With dual steering — While the driver is changing driving position, the sweeper must be stopped with the propel pedal in neutral and the parking brake applied.

1. At the front of the sweeper, properly adjust the round, convex mirrors (Figures O-3 and O-4) to give an operator in either operating position a clear view of any and all obstacles and/or pedestrians in front of the sweeper.

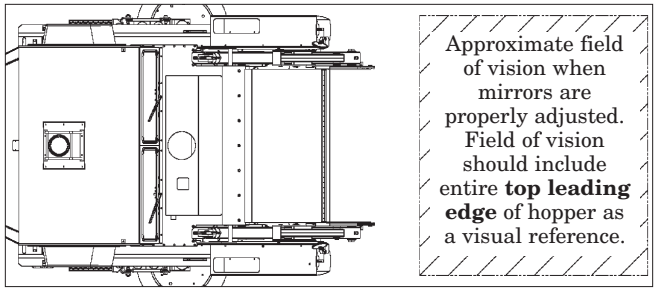
2. After starting and warming up the engine, turn on the needed lights by using the Hazard (33, Figure O-1), Head Lights (35), and optional Beacon (34) switches.

3. Release the parking brake.

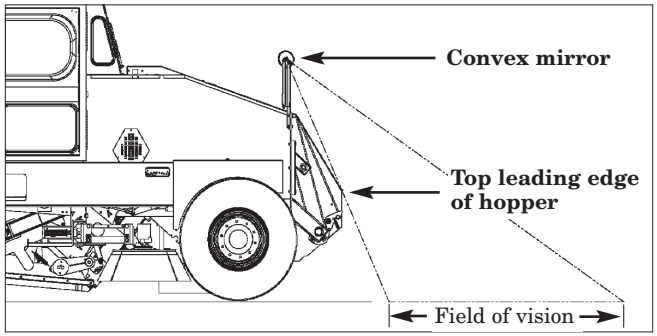
4. As necessary, stop rotation of the brooms and conveyor by using the Broom Rotate switches (22, 27, 45) and Conveyor Rotate switch (49).

5. As necessary, raise the side brooms to transport position by using the Broom Height switches (26, 46).

6. If the sweeper has standard main broom suspension, use the MB / Conv Height switch (50) to raise the main broom and conveyor.
If the sweeper has hydraulic main broom


Approximate field of vision when mirrors are properly adjusted. Field of vision should include entire **top leading edge** of hopper as a visual reference.

Top View Of Sweeper
Figure O-3



Side View Of Sweeper
Figure O-4

suspension, use the CONV LOWER / MB/CONV UP switch (47) to raise the main broom and conveyor.

7. Set the Engine Throttle Control (53, Figure O-2) for transport RPM.

8. Turn on the lights, using the Hazard switch (33), Head Lights switch (35), and optional Beacon switch (34) as needed.

9. Ensure that the front of the machine is clear before moving it forward. During operation of the sweeper, monitor the front round mirrors for people outside of your direct field of view.

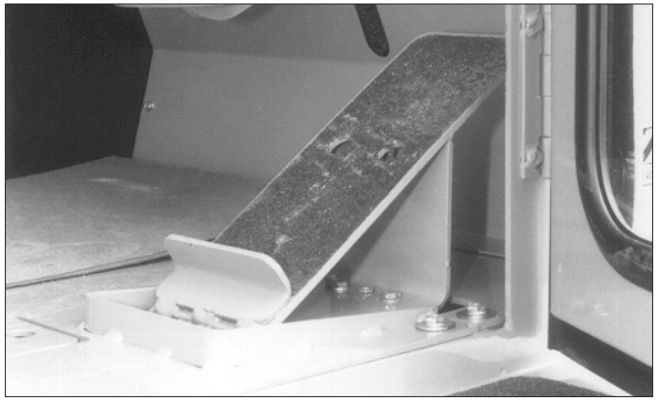
10. To move the sweeper forward, press the upper end of the propel pedal (Figure O-5). To move the sweeper backward, press the lower end of the pedal.

11. Releasing the propel pedal will result in dynamic braking which will slow the sweeper. For additional braking, use the service brake pedal (Figure O-6) located next to the propel pedal.

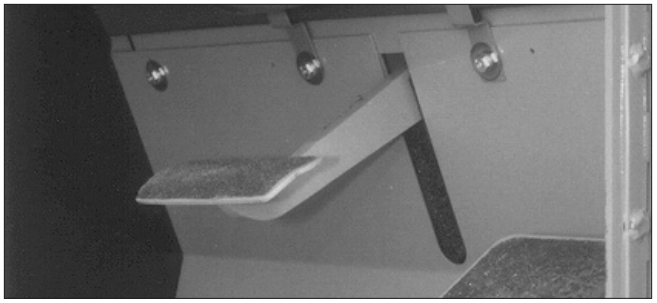
SWEEPING

⚠WARNING

The operator may not be able to see directly in front of machine, and operating with people in front of sweeper can cause severe injury or death.
Ensure that area in front of machine is clear



Propel Pedal
Figure O-5



Brake Pedal
Figure O-6

before and while moving forward. Properly adjust front round convex mirrors before operating and monitor them for people outside of your direct field of vision.

⚠WARNING
With dual steering — Turning both steering wheels at the same time will cause unpredictable steering. To prevent serious injury or death, use only one steering wheel at a time to steer the sweeper.

⚠CAUTION
If the operator has not operated a vehicle with rear-wheel steering, the operator must practice driving the Pelican in a non-congested, open area until totally familiar with the steering.

⚠CAUTION
With dual steering — While the driver is changing driving position, the sweeper must be stopped with the propel pedal in neutral and the parking brake applied.

1. Before operating the sweeper, adjust the front round mirrors as instructed at Transport.

2. Before engaging sweeping components, bring the Pelican to a complete stop and idle the engine at 1000 rpm.

3. Lower the main broom and conveyor together by using the MB/Conv Height switch (50, Figure O-1). Press the switch until the conveyor reaches its lowest position.

4. With the conveyor completely lowered, if the main broom is not at proper height, use the same switch (50) to adjust broom height. This adjustment will not affect the height of the conveyor.

5. Start conveyor rotation by using the Conveyor Rotate switch (49).

6. Lower the side broom(s) by using the Broom Height switch(es) (26 and/or 46).

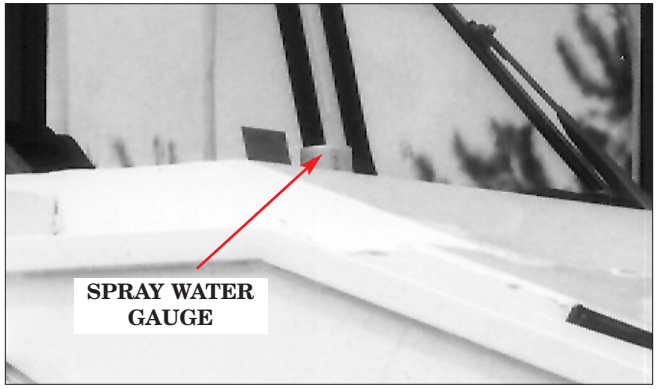
7. As necessary, start rotation of brooms by using the Broom Rotate switches (22, 27, 45).

8. Activate spray water by using the Spray Water switch(es) (28 and/or 44). Water volume is controlled by using the Spray Water valve (51, Figure O-2).

9. During sweeping, monitor the level of water in the spray water tank. Sweeping without water will result in poor dust suppression. The water gauge is located in front of the right windshield (Figure O-7).

10. If necessary, turn on lights using:
    Hazard switch (33, Figure O-1)
    Head Lights switch (35)
    Broom Light switch(es) (29 and/or 43)
    Beacon switch (optional) (34)
    Rear Flood switch (optional) (37).

11. Use the Engine Throttle Control (53, Figure O-2) to set the recommended engine speed



Area In Front Of Windshield
Figure O-7

according to sweeping conditions. See Table O-1.

12. Ensure that the front of the machine is clear before moving it forward. During operation of the sweeper, monitor the front round mirrors for people outside of your direct field of view.

When sweeping, to keep the sweeper evenly aligned with the curb, choose a focal point on the front of the sweeper, such as the edge of the mirror or a place on the hopper, and line it up with the edge of the curb ahead of the sweeper. This eliminates any tendency to oversteer the sweeper.

⚠CAUTION

Do not lean out the opened bubble window while sweeping. Doing so may result in injury by low-hanging branches, etc.

Sweeping Conditions	Engine Speed, RPM	Sweeper Speed, MPH
Light	**1500 rpm**	**5-7 (8-11 km/h)**
Medium	**1800 rpm**	**3-5 (5-8 km/h)**
Heavy	**2100 rpm**	**2-4 (3-6 km/h)**

Table O-1
General Sweeping Guidelines

The side mirror must be correctly adjusted to view side broom operation and location.

While sweeping light material like leaves, if the sweeper starts pushing a pile of the material, sweeping may be improved by raising the conveyor slightly. To make this change, tap the MB / Conv Height switch (50, Figure O-1).

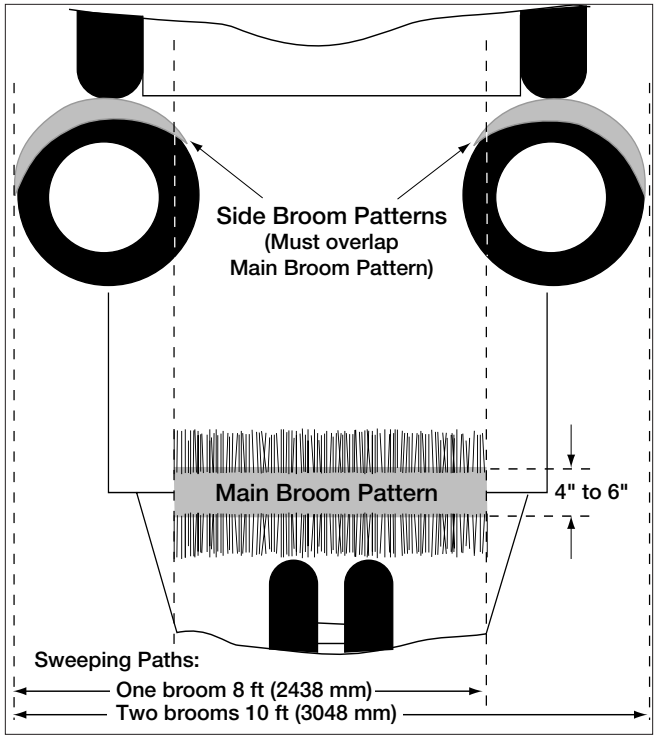
SWEEPING PATTERNS

Broom sweeping patterns are a guideline of sweeping performance. Patterns should be checked daily.

A pattern may be wrong because of incorrect broom downpressure, incorrect broom angle, or excessive broom wear.

A pattern narrower than that in Figure O-8 indicates that there is too little downpressure, which will result in poor sweeping performance. A pattern wider than the diagram indicates excessive downpressure, which will cause the broom to wear too fast.

If a side broom is set too flat, debris will be scattered instead of being directed to the path of the



Pelican P Broom Patterns
Figure O-8

conveyor. If a side broom is tilted at too large an angle, debris will trail or be scattered, and the broom will wear too fast. If the main broom is not kept parallel to the swept surface, the broom will wear into a coned (tapered) shape and will give poor sweeping performance.

If a broom's bristles have worn to less than half of their original length, the broom will produce a small pattern and poor sweeping performance.

To check the broom patterns:

1. Make sure that the tires are inflated to the correct pressure.

2. Park the sweeper on a level, paved surface.

3. Using the MB / Conv Height switch (50, Figure O-1) and the Broom Height switch(es) (26 and/or 46), lower the main broom and side broom(s).

4. As necessary, use the Broom Rotate switches (22, 27, 45) to start rotation of the brooms.

5. Using the Engine Throttle Control knob (53, Figure O-2), increase engine speed to about 2500 rpm.

6. Sweep in one spot for about 15 seconds.

7. Stop broom rotation by using the Broom Rotate switches (22, 27, and/or 45, Figure O-1).

8. Use the Broom Height switch(es) (26 and/or 46) to raise the side brooms.

9. If the sweeper has standard main broom suspension, use the MB / Conv Height switch (50) to raise the main broom.
   If the sweeper has hydraulic main broom suspension, use the CONV LOWER / MB/CONV UP switch (47) to raise the main broom.

10. Drive forward far enough to reveal the patterns left on the pavement by the brooms.

11. Check that the side broom patterns are crescent-shaped and approximately 4 inches wide

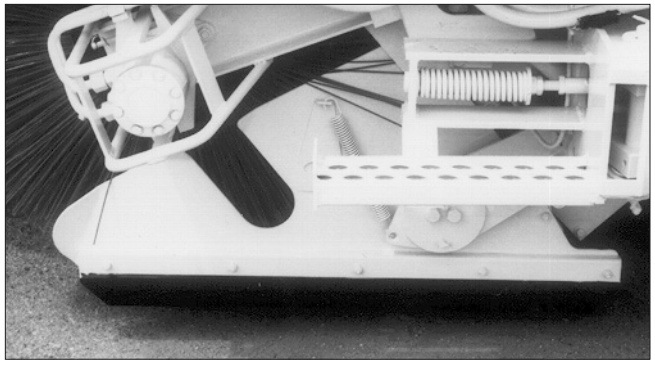
at the top. The patterns should overlap the path of the main broom (Figure O-8).

12. Check that the main broom pattern is of an even width along its whole length (does not taper). The pattern should be 4 to 6 inches (10 to 15 cm) wide. After sweeping, the broom bristle tips should have an even amount of dirt on all of them.

If the patterns do not conform to those in Figure O-8, adjust or replace the brooms, as necessary, by the procedures in the Service Procedures section.

While checking the broom patterns, also check the dirt shoe (Figure O-9) on each side of the main broom. The dirt shoe housings should be flush with the main broom. The shoes should be level with the ground.

Procedures for adjusting the shoes are in the Service Procedures Section.



Dirt Shoe
Figure O-9

REVERSING THE CONVEYOR

The conveyor may be reversed, if necessary, for example, during washdown or if an object is jammed in the conveyor.

NOTICE

Do not operate the conveyor in reverse for more than 15 seconds. Doing so may cause misalignment of the conveyor belt and subsequent damage.

To reverse the conveyor, take the following steps.

1. Slow the engine.

2. Press the 3-position Conveyor Rotate switch (49, Figure O-1) to Off until the conveyor stops.

3. Press the switch to Reverse **just long enough** to remove the jammed object.

DUMPING THE HOPPER

⚠DANGER

Raise or dump hopper in areas free of power lines. Before raising or tilting hopper, check for adequate overhead and forward clearance. Raise hopper only in areas with minimum overhead clearance of 16 ft (5 m) and forward clearance of 3 ft (1 m). Do not raise hopper while under trees, bridges, etc.

⚠CAUTION

Overloading the hopper can cause personal injury or damage to the sweeper. Dump the hopper frequently when loading heavy materials.

1. Come to a complete stop on level surface.

2. Stop rotation of conveyor by using Conveyor Rotate switch (49, Figure O-1).

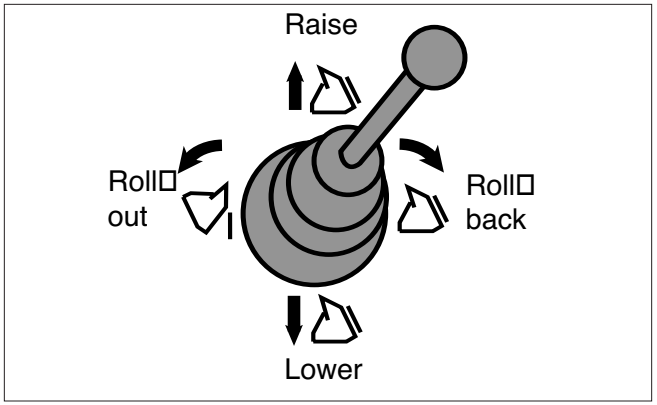
3. As necessary, stop rotation of broom(s) by using Broom Rotate switches (22, 27, 45).

4. Raise side broom(s) by using Broom Height switches (26 and/or 46).

5. If sweeper has standard main broom suspension, use MB / Conv Height switch (50) to raise main broom and conveyor.
   If sweeper has hydraulic main broom suspen-

sion, use CONV LOWER / MB/CONV UP switch (47) to raise main broom and conveyor.

6. Use the Hopper Dump Control (Figure O-10) to control hopper raising and rollout.
   To raise hopper: move control forward
   To lower hopper: move control back



Hopper Dump Control
Figure O-10

   To roll out hopper: move control to left
   To roll back hopper: move control to right
   Hopper requires alternate operation of raise and rollout functions. Be careful not to roll out hopper too far until sweeper is in position to dump hopper.

7. Keep hopper level until in position for dumping.

8. If dumping into truck:
   Raise hopper to full height by moving control forward
   Slowly approach truck
   When properly positioned behind truck, roll out hopper by moving control to left

9. Roll hopper all the way back by moving control to right.

10. Back sweeper away from truck.

11. Lower hopper by moving control to rear.

SHUTTING DOWN THE UNIT

1. Park the sweeper.

2. Use the Engine Throttle Control (53, Figure O-2) to set engine speed to idle (about 1000 RPM).

3. Set the parking brake.

4. Stop rotation of the conveyor by using the Conveyor Rotate switch (49, Figure O-1).

5. As necessary, stop rotation of the brooms by using the Broom Rotate switches (22, 27, 45).

6. Raise the side broom(s) by using the Broom Height switches (26 and/or 46).

7. If the sweeper has standard main broom suspension, use the MB / Conv Height switch (50) to raise the main broom and conveyor.
   If the sweeper has hydraulic main broom suspension, use the CONV LOWER / MB/CONV UP switch (47) to raise the main broom and conveyor.

NOTICE

Before shutdown, the engine must be run at idle speed (about 1000 RPM) for at least 2 minutes to cool hot engine parts. Idling time lets the oil and coolant cool the turbocharger, cylinders, bearings, etc.

8. After the engine has idled long enough, use the Ignition switch (23) to shut down the engine. The length of time needed to cool the hot engine parts depends on the air temperature and the temperature of the engine when the sweeper was parked.

AT END OF SHIFT

For continued high performance, the sweeper must be thoroughly washed down at the end of each shift by the procedure in the Maintenance section.

After washdown is complete, maintenance must be performed as directed in the Maintenance and Service Procedures sections.

Filling the fuel tank at the end of the shift will force most of the air out of the tank. This action will minimize the water condensation that can happen in the air space as the tank cools.

MAINTENANCE

SCHEDULED MAINTENANCE

Wash down machine after every sweeping shift. See Daily Washdown procedure later in this chapter.

DAILY SERVICE CHECKLIST

The numbers below correspond with the locations on Figures M-1, M-2, M-3 and M-4.

Service after every shift or 10 hours

1 Check Engine Oil Level - Oil Pressure Gauge
2 Check Hydraulic Oil Level - Sight Tube
3 Check Radiator Coolant Level
4 Check Tire Inflation Pressure
5 Inspect Pre-Cleaner - Air Filter (Accessory)
6 Drain Water Separator - Engine
8 Wash Down Entire Machine - Flush Out Lower Conveyor Roller
9 Check Windshield Washer Fluid Level
10 Grease Main Broom Bearings (2)
11 Grease Main Broom Pulley & Cylinder (2)
13 Grease Lower Conveyor Roller Bearings (2)
14 Grease Upper Conveyor Roller Bearings (2)
15 Grease Dirt Shoe Pivot Plate (6)
16 Grease Dirt Shoe Pivot (2)
17 Grease Sprung Guide Wheel
18 Grease Main Broom Cam Follower (2)
19 Inspect Water Filter
20 Check backup alarm operation

PERIODIC SERVICE CHECKLIST

The numbers below correspond with the locations on Figures M-1, M-2, M-3 and M-4.

Service after 50 hours

21 Inspect Spray Water Pump
22 Grease Conveyor Pivot (2)
24 Grease Main Broom Cam Pivot (2)
25 Grease Side Broom Turnbuckle
26 Grease Side Broom Kick-Back Bearing
27 Grease Side Broom Lift Bearing
28 Grease Side Broom Lift Cylinder Pivot
29 Grease Side Broom Lift Rod Clevis
30 Grease Side Broom Bell Crank Bearings (2)
31 Grease Side Broom Pivot Pin
32 Grease Hopper Arm Pivot (18)
33 Grease Link Weldment Pivot Point

Service after 150 hours

38 Replace Engine Oil & Filter
39 Inspect Engine Air Intake System (Any Time Indicator Lights)
40 Check Brake Master Cylinder Fluid Level
41 Inspect Engine Drive Belts
42 Inspect & Clean Radiator Cooling Fins
43 Grease Guide Wheel Pivot Bearing
44 Grease Guide Wheel Bearing Hub (2)
45 Grease Foot Control Rod End

Service after 500 hours

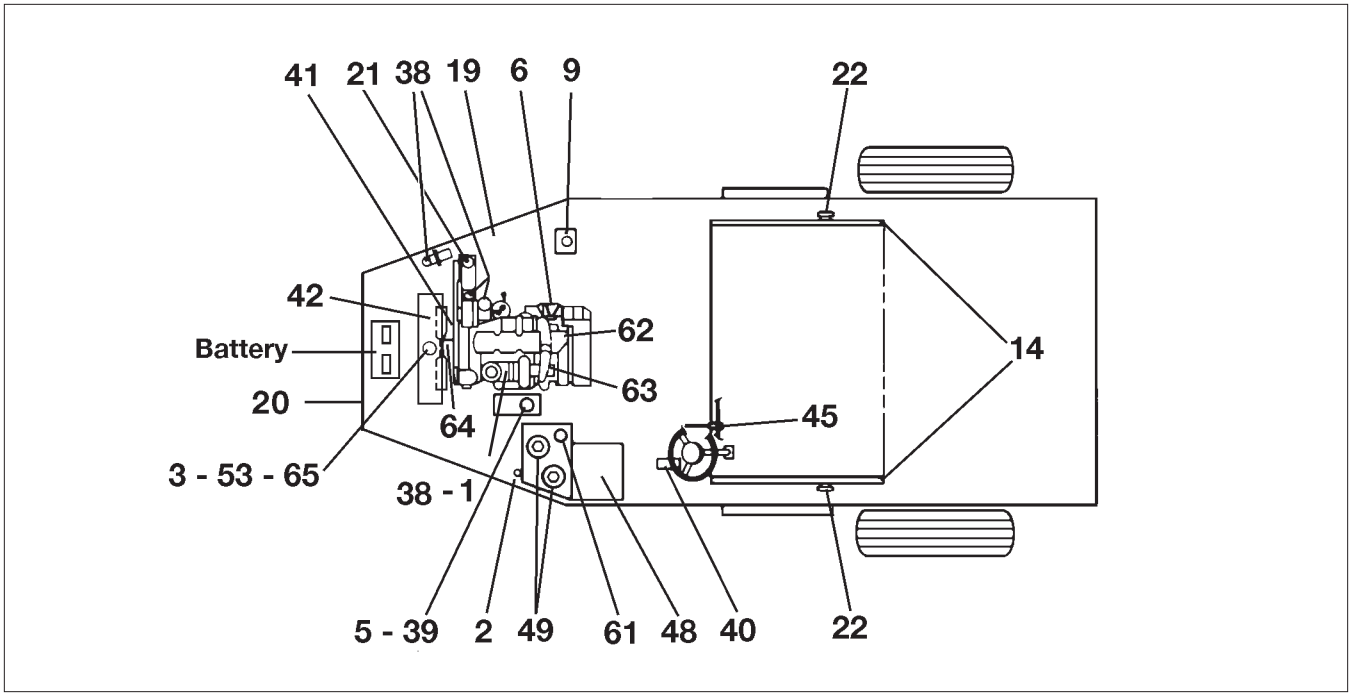
48 Drain & Flush Hydraulic Oil Reservoir
49 Replace Hydraulic Oil Filter (2) (Any Time Indicator Lights)
53 Check Anti-Freeze
54 Check Oil Level In Hubs

Service after 1000 hours

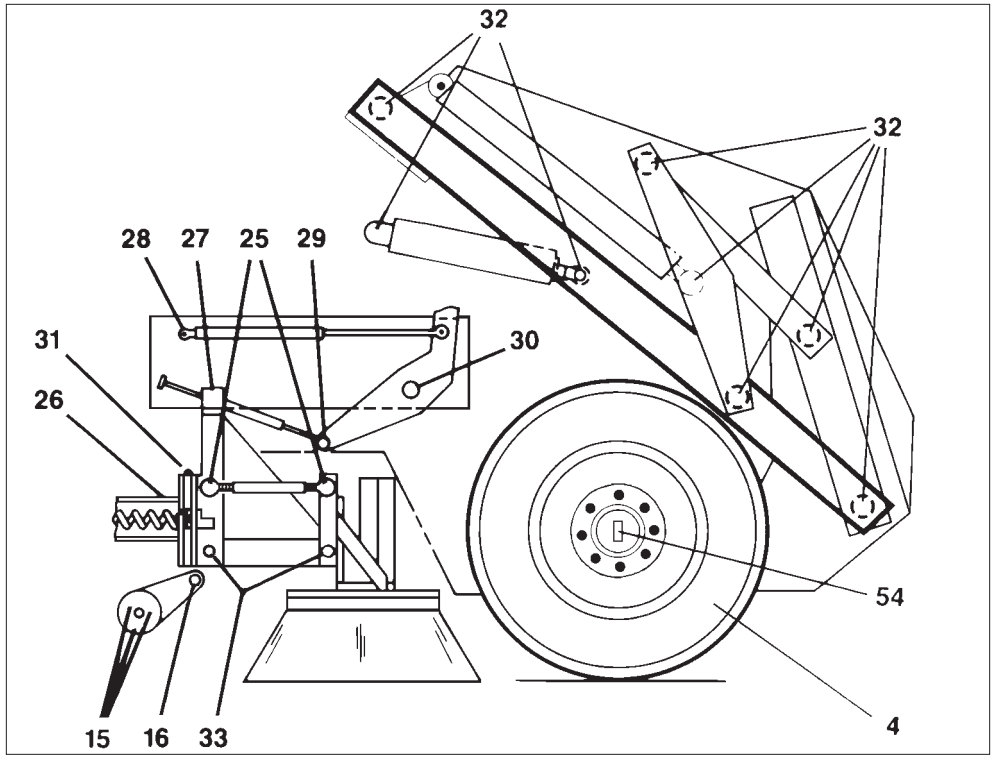
61 Change Hydraulic Oil Reservoir Breather
62 Adjust Valve Clearance
63 Inspect Turbocharger
64 Inspect Engine Fan Hub
65 Change/Flush Coolant - Ethylene Glycol Anti-Freeze

After 1000 hours, change oil in torque hubs.

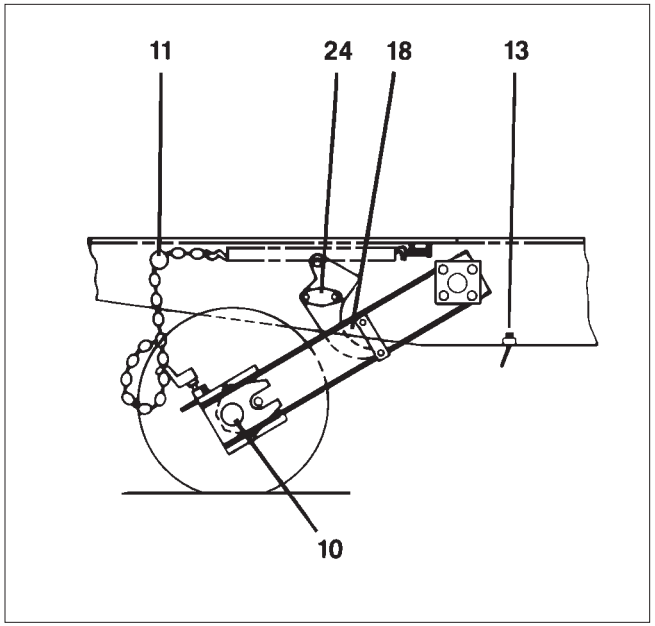
After 5000 hours or 5 years (whichever occurs first), or when servicing the guide wheel as a result of impact damage, replace the guide wheel pivot pin. Examples of impact damage might be, but are not limited to: Bent rim, tire damage, axle damage, etc. Contact Elgin dealer with any questions.



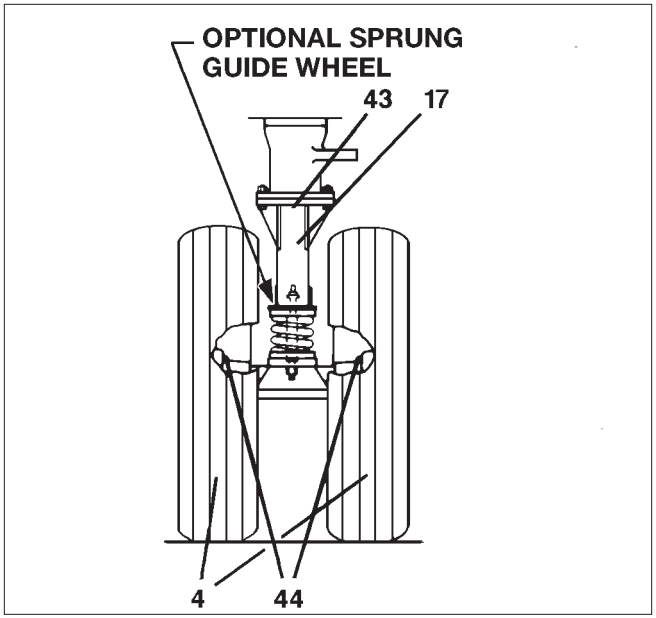
Pelican P Top View - Scheduled Maintenance Items
Figure M-1



Pelican P Front End - Scheduled Maintenance Items
Figure M-2



Pelican P Rear End - Scheduled Maintenance
Figure M-3



Pelican P Guide Wheel
Figure M-4

DAILY WASHDOWN

Washdown after each sweeping shift is essential to good sweeper maintenance. Follow the procedure below for complete, effective cleaning.

1. Park the sweeper on a flat, level surface, away from power lines, trees, etc.

⚠ WARNING

DO NOT work under or around a raised hopper. The best way to get safe access to the machine behind the hopper is the roll-out method described below.

2. Install a 1/2 x 2-1/2 inch bolt in each of the two holes located above the spring-loaded door latches on the sides of the hopper (Figure M-5). The bolts will hold the hopper door closed during roll-out.

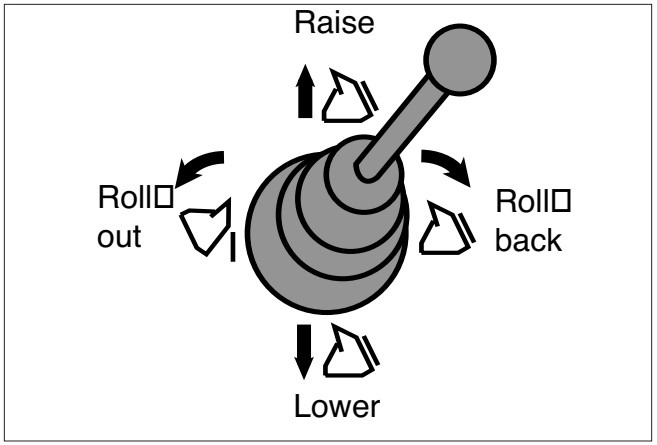
⚠ DANGER

Raise or dump hopper in areas free of power lines. Before raising or tilting hopper, check for adequate overhead and forward clearance.

Raise hopper only in areas with minimum overhead clearance of 16 ft (5 m) and forward clearance of 3 ft (1 m). Do not raise hopper while under trees, bridges, etc.

3. Raise and roll out the hopper using the Hopper Dump Control on the Control Console (Figure M-6).

Locking Hopper Door For Roll-Out
Figure M-5



Hopper Dump Control
Figure M-6

4. When the hopper reaches the limit of its motion, carefully lower the hopper completely to the ground or pavement.

5. Lower the main broom, conveyor and side broom(s) to sweeping positions. Start rotation of the main broom and conveyor.

6. Fill the water tank to overflowing, allowing the water to flush the conveyor belt for one to two minutes. Reverse the conveyor several times during this flushing.

7. With the conveyor still running forward, use high pressure water to flush the conveyor and belt backing plate.

8. Flush out the hopper, all undercarriage parts, side broom(s), dirt deflectors and dirt shoes.

9. Reverse the conveyor for no more than 30 seconds and use high pressure water to dislodge material between roll and edge of scraper bar.

10. Washdown exterior of sweeper, including lights, mirrors, and safety decals.

NOTICE

Never steam clean or wash an engine while it is running. Water can cause a hot manifold to crack.

11. After engine has cooled, washdown engine compartment, including engine radiator and oil cooler.

BUBBLE WINDOW MAINTENANCE

To avoid having the bubble window (Figure M-7) turn milky with age, use an acrylic cleaner, such as the one shipped with the Pelican. Apply the cleaner to a rag and wipe it on the window.

NOTICE

Use a soft cloth on the bubble window. Do not use coarse materials, such as paper towels on the bubble window.

If the bubble window begins to turn milky, clarity may be restored by the following method:

1. Thoroughly clean the window with ammonia and water, being sure to remove all dirt that may be embedded in scratches or cracks.

2. Rinse the window completely and allow it to dry.

Pelican Cab Bubble Window
Figure M-7

3. After window is completely dry, apply a good-quality floor wax with a poly base. This will fill in any scratches and restore the clarity of the window.

To avoid cracking the bubble window, always use the latches on the inside of the cab to close the window. Do not apply force to the window itself.

LUBRICATION

AUTOMATIC LUBRICATION

If the sweeper is equipped with the optional automatic lubrication system, the system and the bearings it serves should be inspected periodically as recommended in the manual from the system manufacturer.

TORQUE HUB OIL

Oil level and type may vary with specific torque hub model and application.

Type

SAE 80W-90
On applications where the lubricant must meet special requirements, a suitable substitute may be used. Contact Elgin Sweeper Company regarding special lubrication needs.

Oil Temperature

Continuous - 160°F (70°C)
Intermittent - 200°F (95°C)

Oil Change Schedule

Initial - After 50 hours of operation
Subsequent - After 1000 hours or one year, whichever comes first.

Higher temperatures may make it necessary to change oil more frequently.

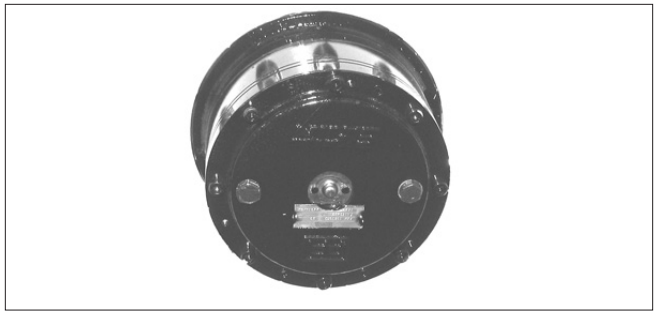
Oil Fill Level and Volume

Unit should be half full. Approximate volume of hub is 37 oz (1.1 L).

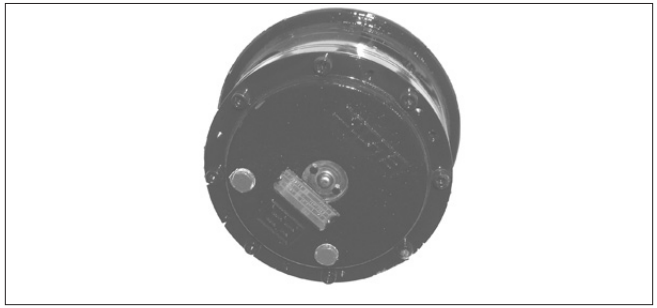
To check oil level:

- For a hub with oil plugs 180º apart (Figure M-8), turn the hub until the plugs are level with the disconnect cover.
- For a hub with oil plugs 90º apart (Figure M-9), turn the hub until the check plug is level with the disconnect cover.

To drain oil, turn hub until one plug is at the bottom.



Torque Hub
Figure M-8



Torque Hub
Figure M-9

NOTES:

SERVICE PROCEDURES

TOWING

NOTICE

Towing with hubs engaged will damage hydrostatic drive.

In all cases the procedure below must be followed, proper equipment must be used, and all laws applying to vehicles in tow must be obeyed.

⚠ CAUTION

Never tow the sweeper faster than 20 mph (32 km/h).

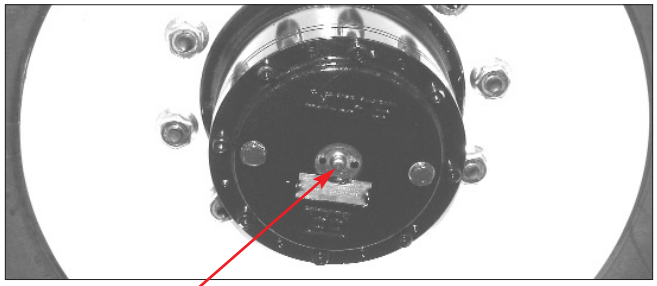
The Pelican may be towed from the rear with the drive wheels on the ground **after disengaging** the torque hubs (Figure SP-1) on both sides.
To tow the Pelican:

1. Set parking brake.

⚠ WARNING

The drive wheels must be blocked, before you prepare the sweeper for towing.

2. Block drive wheels, so sweeper cannot roll forward or backward.



Torque hub
Figure SP-1

⚠ CAUTION

Disconnect cover should be removed carefully to prevent injury by spring-loaded pin or loss of pin. Pin may press out on cover continuously or may catch and then spring out suddenly.

3. At each drive wheel, take the following steps.

   a. Carefully remove two screws and disconnect cover from hub (Figure SP-1).

   b. Reverse disconnect cover to push tow pin in and disengage hub. Pin **must** be pushed to inner position to prevent damage.

   c. Secure cover with screws.

4. Connect rear of sweeper to towing vehicle.

⚠ WARNING

Make sure the sweeper will not roll out of control, before you unblock the wheels.

5. Unblock wheels.

6. Release parking brake before towing Pelican.

After towing is completed, take the following steps.

1. Set parking brake.

⚠ WARNING

The drive wheels must be blocked, before the sweeper is disconnected from the towing vehicle.

2. Block drive wheels, so sweeper cannot roll forward or backward.

3. Disconnect sweeper from towing vehicle.

⚠ CAUTION

Disconnect cover should be removed carefully to prevent injury by spring-loaded pin or loss of pin. Pin may press out on cover continuously or may catch and then spring out suddenly.

NOTICE

Hydrostatic drive system must not be operated with either tow pin in "tow" position (the inner position). Damage to shaft and splines may result.

4. At each drive wheel, take the following steps.

   a. Carefully remove two screws and disconnect cover from hub (Figure SP-1) to let tow pin move out and engage hub.

      NOTICE

      If a tow pin does not pop out, it can be made to do so by rocking the sweeper backward and forward or by jacking up the front of the sweeper and turning the drive wheel. If a jack must be used, see Wheels And Tires in this section of the manual.

   b. Reverse disconnect cover, so it will hold tow pin in outer position.

   c. Secure cover with screws.

⚠ WARNING

Make sure sweeper will not roll out of control, before you unblock the wheels.

5. Unblock wheels.

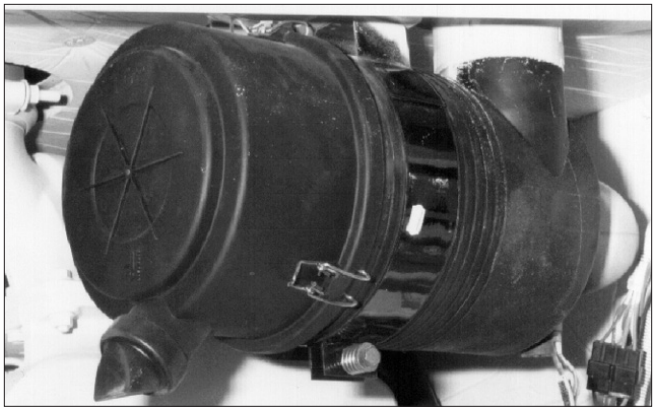
AIR CLEANER

The engine is equipped with a dual-element, dry-type air cleaner with an automatic rubber unloader (dump) valve (Figure SP-2). A sensor in the air cleaner signals when air flow is restricted, causing the air filter restriction indicator to light on the control console. This indication alerts the operator that the air filter needs servicing.

NOTICE

Do not open the air cleaner unless the indicator lights or weak engine performance suggests a lack of air supply.

To service the air cleaner, use the following procedure:



Air Cleaner Assembly
Figure SP-2

1. Remove the cover from the filter canister.

2. Remove and discard the outer element.

NOTICE

A dirty element should always be discarded, not cleaned for further use. Cleaning an element voids the warranty and makes the element less effective.

3. Visually check the rubber unloader valve, and pinch the lips of the valve to remove any accumulation of debris. If the unloader is damaged, install a new unloader.

4. Clean the inside of the air cleaner canister with a damp, lint-free cloth.

5. Install a new outer element.

6. Securely fasten the cover on the filter canister with the unloader at the bottom. Make sure all clamps are correctly fastened.

7. With the engine operating, check the air filter restriction indicator. If the indicator stays off, air cleaner service is complete. If the indicator lights, go to step 8.

8. With the engine shut down, open the air cleaner.

9. Remove and save the outer element, taking care to keep the element clean and to avoid any damage to the element.

NOTICE

A damaged outer element, or one with a loose, damaged, or missing seal, will allow dust to clog the inner element.

10. Remove and discard the inner element.

11. Install a new inner element and the saved outer element, making sure they are correctly seated.

NOTICE

To prevent damage, the elements must be completely seated before the canister cover is installed.

12. Securely fasten the cover on the filter canister with the unloader at the bottom. Make sure all clamps are correctly fastened.

13. Check the whole air intake system for leaks.

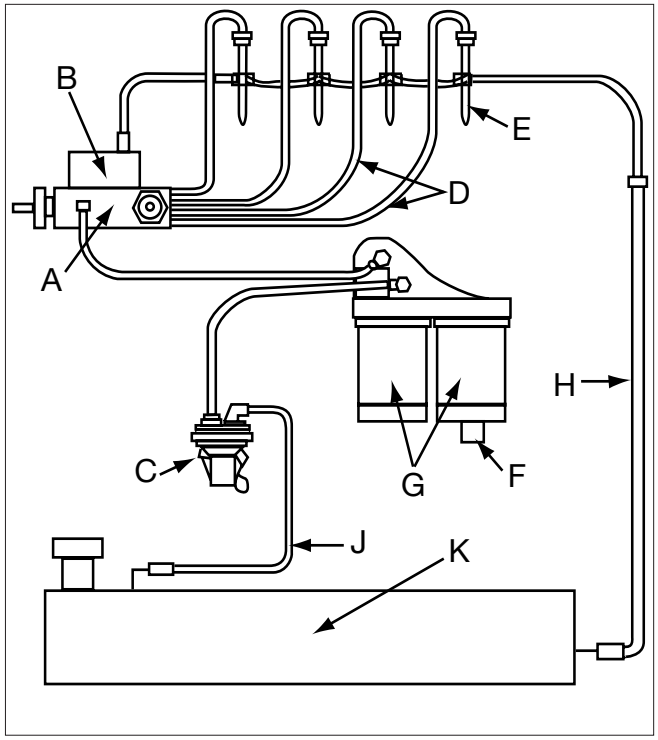
FUEL SYSTEM

The fuel lift pump (C, Figure SP-3) draws fuel from the fuel tank (K) and pushes it through the fuel filters (G) to the injection pump (A). The injection pump forces fuel through the injectors (E), which atomize the fuel and spray it into the combustion chamber of each cylinder. The low pressure leak-off return line (H) from the injection pump passes through each injector and returns to the fuel tank.

DRAINING FUEL WATER SEPARATOR

The water separator on the bottom of the fuel filter (Figure SP-4) should be checked daily and drained when needed. Frequency of draining will be determined by operating conditions and quality of the fuel.

To drain the separator, use the following procedure.



Fuel System
Figure SP-3

Fuel Filter
Figure SP-4

1. Remove the drain plug from the bottom of the filter.

2. Loosen the bleed screw.

3. Allow the water and any contaminated fuel to drain into a pan.

NOTICE

The presence of a large amount of water in the filter may indicate that water should be drained from the fuel tank. If so, the cause of the water build-up should be found.

4. Install and tighten the drain plug. Drain must always be closed before starting the engine.

5. Bleed air from the fuel system by following the instructions in the operator manual supplied by the engine manufacturer.

6. Start the engine, then make sure that no fuel is leaking from the filter.

CHANGING FUEL FILTER

To change the fuel filter (Figure SP-4), use the following procedure.

1. Turn the filter cartridge to remove it from the filter head.

NOTICE

The presence of a large amount of water in the filter may indicate that water should be drained from the fuel tank. If so, the cause of the water build-up should be found.

2. Inspect the filter for water build-up, then discard it.

3. Clean the filter sealing surface.

4. Apply a light coat of engine oil to the surface of the filter gasket.

5. Install a new filter cartridge in the filter head.

6. Bleed air from the fuel system by following the instructions in the operator manual supplied by the engine manufacturer.

BLEEDING FUEL SYSTEM

Air must be removed from the fuel system after the system has been opened or the engine has run out of fuel.

To bleed air from the fuel system, follow the directions in the operator's manual supplied by the engine manufacturer.

HYDRAULIC SYSTEM

The hydraulic system of the Pelican P is spline shaft driven. There are no belts to break or pulleys to adjust.

There are three basic hydraulic systems:

- hydrostatic drive system
- hydraulic sweep system
- hydraulic steering system.

All three systems share a common hydraulic oil tank with two filters (Figure SP-5). The tank is located next to the engine on the right hand side of the sweeper. With the hopper **down,** check the oil level at the sight gauge on the side of the tank.

Hydraulic Tank And Filters
Figure SP-5

NOTICE

Elgin Sweeper Company recommends Shell Tellus T 68 or equivalent hydraulic oil. Never mix different kinds of hydraulic oil.

Use new, clean hydraulic oil that meets all Elgin Sweeper Company requirements. Never mix different types of oil. When adding oil, remove the plug on the top of the return filter and add oil. This will prefilter the oil added to the tank.

Every 500 hours of operation, drain the tank, put in new hydraulic oil, and replace the hydraulic filter elements with new elements. (Never try to clean an element for further use.) Every 1000 hours, replace the hydraulic tank breather with a new one.

SPRAY WATER SYSTEM

Spray water is used during sweeping to suppress dust and to moisten the debris for better settling in the hopper.

A fill hose is stored in the front fender (Figure SP-6). Before filling the water tank(s), always allow the hydrant to run to flush out any sediment or debris in the hydrant.

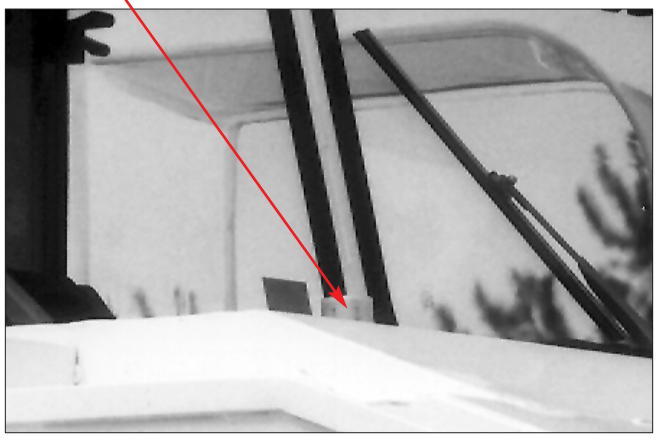
Water for the spray water system passes through a 100 mesh filter prior to entering the water pump.This stainless steel strainer filter is located under the removable left hand side panel. A shutoff

Fill Hose
Figure SP-6

valve is located between the water filter and the water tank. This should be turned off to stop water from flowing out of the tank when the filter screen is removed for daily cleaning. The filter should be changed only if it has been damaged.

A mechanical water level gauge (Figure SP-7) is visible through the right windshield.

The flow of water is controlled through switches and a valve at the control console in the cab, as detailed in the Operation section of this manual.



Area In Front Of Windshield
Figure SP-7

BROOM ADJUSTMENT

Broom sweeping patterns are a guideline of sweeping performance. Patterns should be checked daily according to the procedure in Operation section of this manual. If the patterns do not conform to those shown in the Operation section, correct the patterns by using the following procedures, as needed.

SIDE BROOM ADJUSTMENT

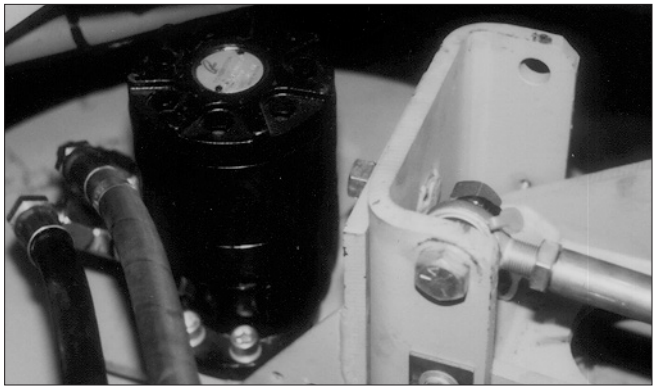
Side-To-Side Angle

To correct the side-to-side angle, take the following steps.

1. With the side broom down and extended, loosen the two bolts that attach the motor bracket to the forward side broom bracket (Figure SP-8).

2. Tilt the assembly to the proper angle.

3. Tighten the bolts.

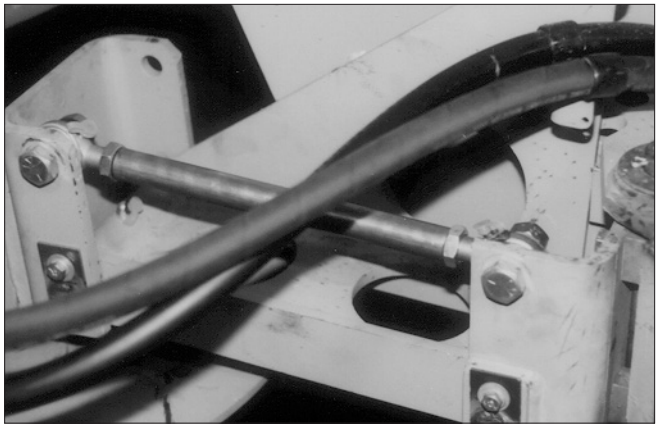


Side Broom Bracket
Figure SP-8

Front-To-Back Angle

To correct the front-to-back angle, take the following steps.

1. Loosen the turnbuckle jam nut located on the upper broom suspension (Figure SP-9).



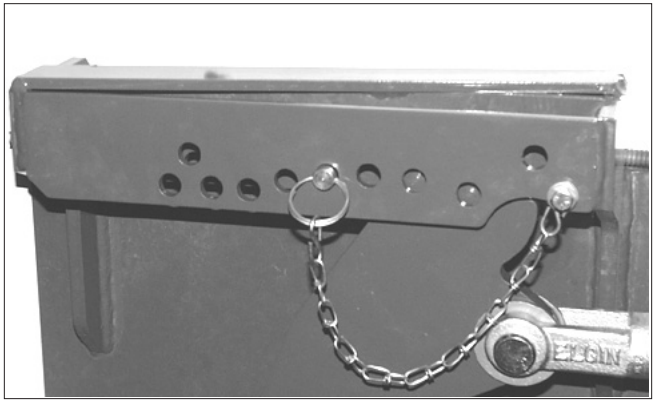
Side Broom Turnbuckle
Figure SP-9

2. Rotate the turnbuckle to adjust the broom angle.

3. Tighten the turnbuckle jam nut.

Down Pressure

To correct the side broom down pressure, reset the position of the quick-release pin located on the adjustable stop (Figure SP-10).



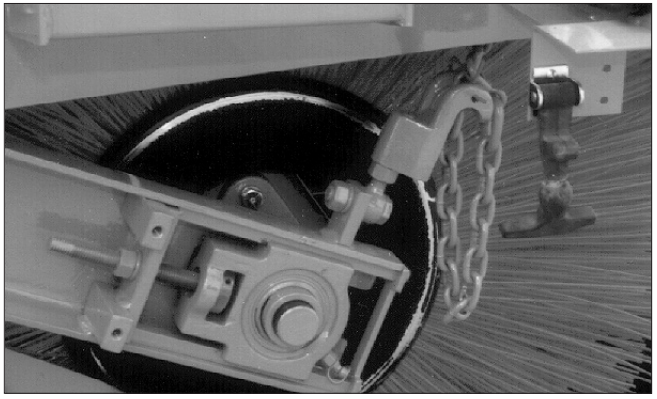
Down Pressure Adjustment
Figure SP-10

MAIN BROOM ADJUSTMENT

Standard (Chain) Suspension

To adjust the main broom contact area with a chain suspension (Figure SP-11), take the following steps.

1. Lower the main broom on a flat, level surface.



Main Broom Chain Suspension
Figure SP-11

2. Adjust the spring tension on one side as necessary using the chain. For example, if the left side shows more wear (or taper) than the right side, shorten the chain on the left side to raise the left side of the broom.

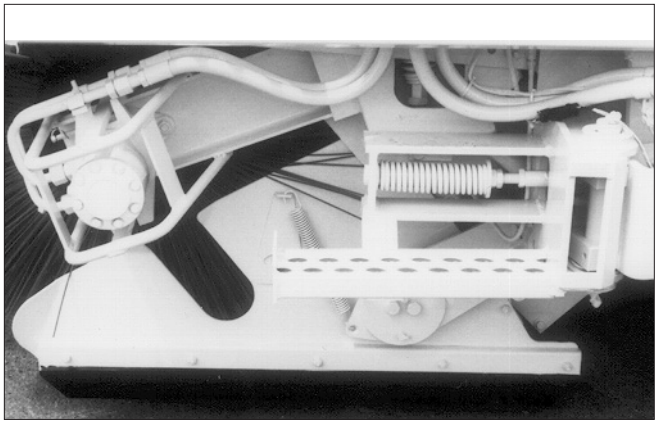
Hydraulic Suspension

In the optional hydraulic main broom suspension (Figure SP-12), the snubbing spring is compressed or released to adjust for even broom wear. The factory adjustment for the left side is approximately 3.75 in, for the right 1.25 in. This counterbalances the added weight of the drive motor on the right side.

If the left side shows more wear than the right side, raise the left side.

To adjust the main broom contact area with the optional hydraulic suspension, use the following procedure:

1. Lower the main broom on a flat, level surface.



Hydraulic Main Broom Suspension
Figure SP-12

2. Loosen the jam nut.

3. Turn the adjusting nut up or down as needed. If the adjusting nut does not want to turn, a little oil on the nut and collar will help. Two complete turns of the adjusting nut will result in about 1" of change in the taper (the difference in diameter between the ends of the broom).

4. Tighten the jam nut.

DIRT SHOE ADJUSTMENT

Dirt shoes ride perpendicular to the ground to act as a guide to keep debris between the main broom and the conveyor.

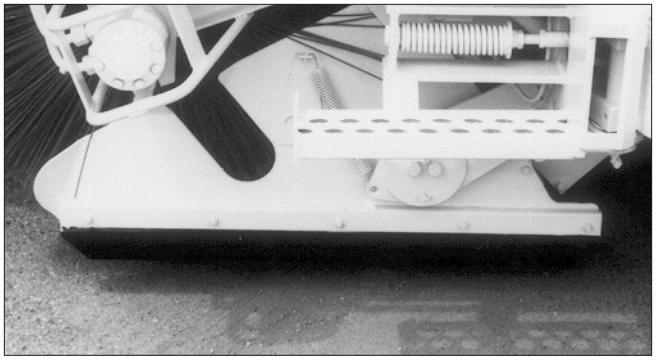
The main broom rotates between the two dirt shoes. Wings at the rear of each dirt shoe assure that the bristles are turned in and ride flush within the dirt shoe housings.

Both dirt shoes (Figure SP-13) should be correctly aligned and ride level with the surface of the road. If they are not correctly positioned, this should be corrected immediately.

To check for proper dirt shoe adjustment, use the following procedure.

1. Lower the main broom.

2. Start main broom rotation.



Dirt Shoe
Figure SP-13

3. Drive the sweeper forward to allow brooms to attain proper sweeping position.

4. Visually inspect the rotation of the main broom between the dirt shoes.

5. Raise the broom and drive forward to allow components to attain transport position. In raised transport position the dirt shoes should be parallel to, but not touching the ground.

If the dirt shoes are not level in the raised position, adjust them by loosening the two nuts holding the dirt shoe adjusting plate.

To raise the rear of the dirt shoes, lift the plate toward the lifting rod. To lower the rear of the dirt shoes, move the plate away from the lifting rod.

DIRT DEFLECTORS

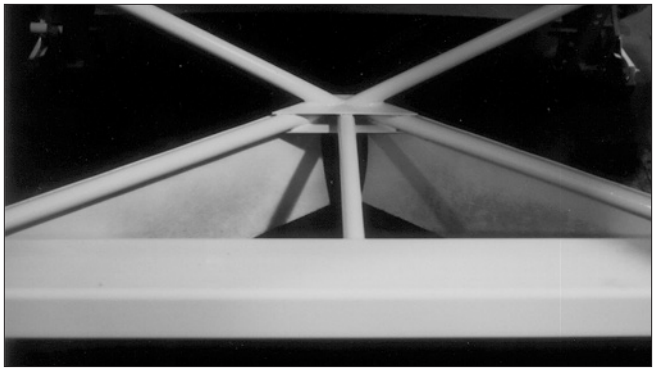
Dirt deflectors are located in various places in the Pelican. They aid in keeping debris moving toward the hopper.

Dirt deflectors are installed between the conveyor and the chassis to prevent debris from spilling over the sides of the conveyor.

Two rubber deflectors span the width of the Pelican between the drive wheels. These can be removed, if necessary, during leaf removal season.

On Pelicans equipped with dual side brooms there are two dirt deflectors (Figure SP-14) mounted in the center of the unit. These dual dirt deflectors form a “V” under the hopper area.

On single broom units a dirt deflector is located on the left hand side just ahead of the dirt shoe. A rubber runner maintains contact with the street to prevent debris from being thrown to the side beyond the reach of the main broom. This runner may be adjusted by loosening the nuts in the metal plate and raising or lowering the runner as needed. All dirt deflectors should be inspected regularly and changed if damaged or worn.



Dirt Deflectors on Dual Unit
Figure SP-14

CONVEYOR

CONVEYOR ACCESS

The hopper must be rolled out and lowered to provide safe access to the conveyor. To perform the safety roll-out, use the following procedure.

⚠ DANGER

Raise or dump hopper in areas free of power lines. Before raising or tilting hopper, check for adequate overhead and forward clearance. Raise hopper only in areas with minimum overhead clearance of 16 ft (5 m) and forward clearance of 3 ft (1 m). Do not raise hopper while under trees, bridges, etc.

⚠ WARNING

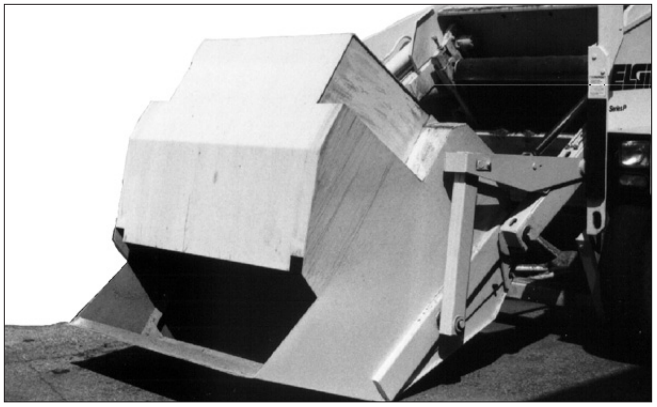
DO NOT work under or around a raised hopper. The best method for safe access to the machine behind the hopper is the roll-out method described below.

1. Install a 1/2 x 2 1/2-inch bolt in each of the two holes located above the spring-loaded door latches on the sides of the hopper (Figure SP-15). The bolts will hold the hopper door closed during roll-out.

2. Raise the hopper slightly and begin to tilt ("roll") the hopper completely over, raising and tilting the hopper as needed.

3. When the hopper reaches the limit of its motion, carefully lower the hopper completely to the surface on which the sweeper is standing (Figure SP-16).

Locking Hopper Door For Rollout
Figure SP-15



Hopper Rolled Out For Service
Figure SP-16

ADJUSTING CONVEYOR

Conveyor Belt Adjustments

Before belt adjustment, the conveyor belt must be clean and the lower roll area must be flushed out. The main broom and conveyor must be lowered.

NOTICE

Do not attempt to adjust the conveyor belt with the conveyor system in the raised position.

Proper conveyor belt adjustment involves first setting tension and then adjusting alignment by the procedures under Belt Tension and Belt Alignment.

NOTICE

Belt tension and alignment for both rolls are interrelated. During tension adjustment, the belt must be kept nearly centered, but tension must be correct before final adjustment of alignment. It is important to make small adjustments and to check belt tension and alignment by operating the belt for at least 30 minutes between adjustments.

A properly tensioned belt will have good clearance between each belt cleat and the lower conveyor backing plate. Too much slack will cause "flapping" of the belt against the backing plate and result in damage to the belt.

The conveyor belt must be accurately aligned, or trained, to stay on the middle of the rollers. A misaligned belt can travel across the rollers and into

the conveyor sides, where it will suffer tearing or other damage.

BELT TENSION

The conveyor belt has correct tension when there is clearance between the tip of any cleat and conveyor backing plate. If too loose, the belt may slip on the upper roll and the cleats may show wear from dragging over the backing plate. DO NOT overtighten belt, as this will cause premature failure.
To adjust belt tension, use the following procedure.

⚠ WARNING

DO NOT work under or around a raised hopper.

1. After following the procedure under Conveyor Access, lower the main broom, conveyor, and side broom.

⚠ WARNING

Contact with moving parts can cause severe injury. Do not attempt repairs or go underneath machine with engine running. Use extreme care when making checks or adjustments that require the engine to be running.

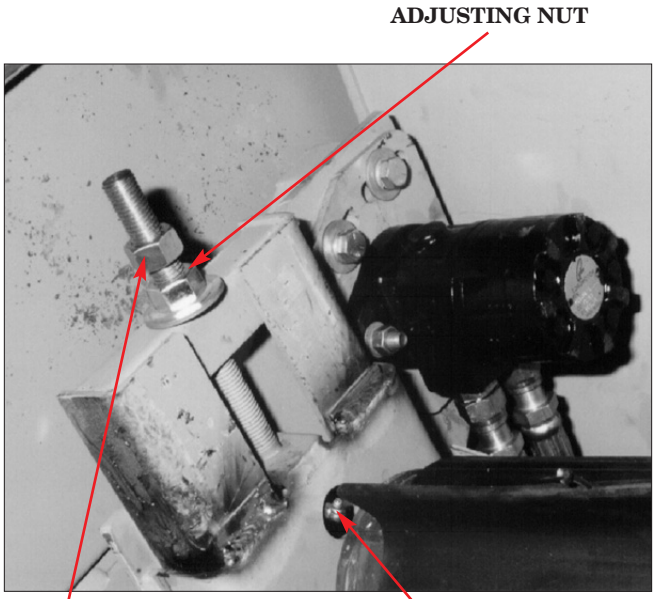
NOTICE

All belt tension adjustments should be made with ***no more than one-half turn*** *of the adjusting nuts at any one time. The conveyor should then be run at least 30 minutes to check the results before making another adjustment.*

2. Loosen the jam nuts on each side of the upper conveyor assembly (Figure SP-17).

3. As needed to achieve correct tension that is uniform across the belt, turn both adjusting nuts. Turn the nuts clockwise to increase tension or counterclockwise to decrease tension. Turn each nut **only one-half turn** at a time.

4. With the engine running at about 1200 RPM, operate the conveyor for at least 30 minutes between adjustments to check belt tension, alignment, and direction of travel, if any, over both the upper and lower rolls.



Upper End Of Conveyor Assembly
Figure SP-17

5. If the belt "flaps" against the lower conveyor cover, increase **overall** belt tension by continuing adjustment steps on both sides of the upper conveyor roll.

6. If alignment does not need adjusting, tighten the jam nuts.

BELT ALIGNMENT

Proper belt alignment will require making small adjustments to the upper roll as outlined below. As a result, upper conveyor roll take-ups may not have equal final adjustments.

In some cases, adjusting the upper roll may not be sufficient to keep the belt centered on both rolls. It may be necessary to make similar adjustments to the lower roll.

NOTICE

Belt tension, alignment, and centering adjustments

for both rolls are interrelated. While adjusting alignment, it is important to make small adjustments and to maintain proper tension.

Reference to right or left side of the sweeper is relative to the operator's position in the driver's seat.

⚠ WARNING
DO NOT work under or around a raised hopper.

Before beginning belt alignment, follow the procedure under Conveyor Access.

Follow these guidelines for correct belt alignment:

Adjust the conveyor to give correct belt tension before making final adjustments in alignment.

Operate the conveyor long enough to bring the belt up to steady operating temperature, before trying to completely adjust alignment.

.....BELT TRAVELS TO THE RIGHT
Increasing tension on the right side or decreasing tension on the left will draw the belt to the left.
BELT TRAVELS TO THE LEFT.....
Increasing tension on the left side or decreasing tension on the right will draw the belt to the right.

Operate the conveyor for at least 30 minutes between adjustments.

NOTICE

Do not *operate conveyor in reverse for more than 30 seconds without allowing forward motion to center belt. Excessive reverse running can damage belt.*

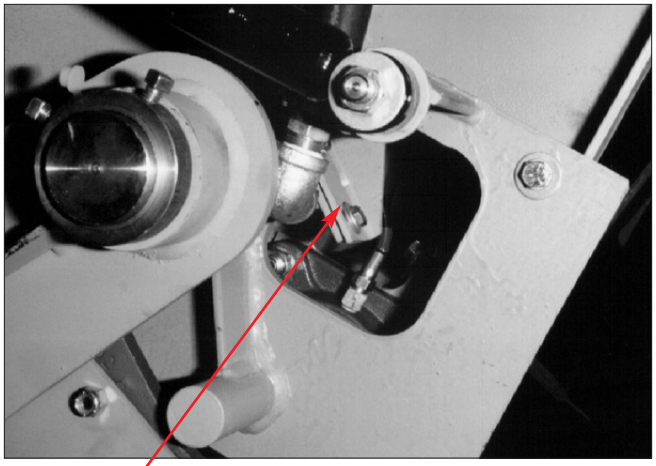
When the belt seems to be properly centered, test the stability of the alignment by operating the conveyor in reverse for about 15 seconds and then running it forward. Within about 5 minutes, a correctly adjusted conveyor will center the belt and keep it centered.

Other Conveyor Adjustments

LOWER ROLL SCRAPER ADJUSTMENT

Lower roll scraper adjustment should be checked periodically and whenever the belt is removed. The square opening just above the lower roll bearing (Figure SP-18) provides access for adjustment. To adjust the scraper, take the following steps.

1. Loosen two nuts at each end of the scraper.
2. Adjust the scraper to clear the roll by no more than 1/16 inch (1.6 mm).
3. Tighten the nuts.



Right Side Of Lower Roll
Figure SP-18

NOTICE

The condition of the lower belt scraper (rubber) that is part of the lower roll scraper assembly should be checked, and the belt scraper should be replaced, if necessary.

CONVEYOR GROUND CLEARANCE

Conveyor ground clearance (height) should be adjusted after the new belt is in place to ensure good conveyor performance. The clearance may be out of adjustment for a machine in the field due to wear and loosening of the lower roll bearings and conveyor lift cylinders.

1. Park the sweeper on a level surface.

2. Remove the main broom.

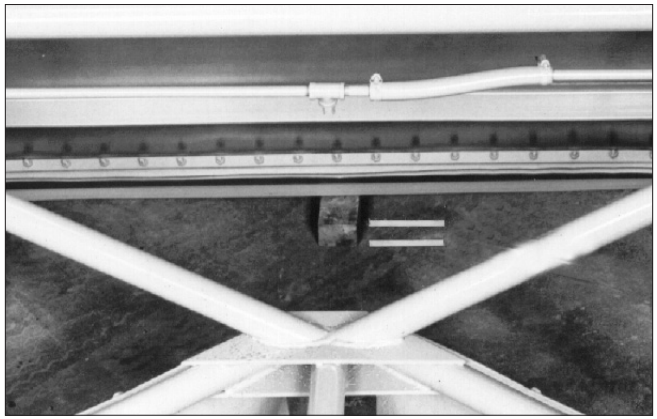
⚠ WARNING
DO NOT work under or around a raised hopper.

3. Follow the procedure under Conveyor Access.

4. Lower the conveyor.

5. Rotate the conveyor belt by hand until one belt cleat is perpendicular to the surface on which the sweeper is standing.

6. Place a 1-5/8 ± 1/4 inch (41 ± 6 mm) wooden block under the cleat at the middle of the conveyor belt (Figure SP-19). (A standard 2 x 4 block can be used to estimate this dimension.) The cleat should touch or barely clear the block.



Ground Clearance Of Conveyor
Figure SP-19

NOTICE

Due to the lower roll offset, clearance at the left side will be slightly less than the clearance at the middle, and clearance at the right side will be greater.

7. If adjustment is necessary, take the following steps.
   a. Raise the conveyor.

   b. Block and support the conveyor.

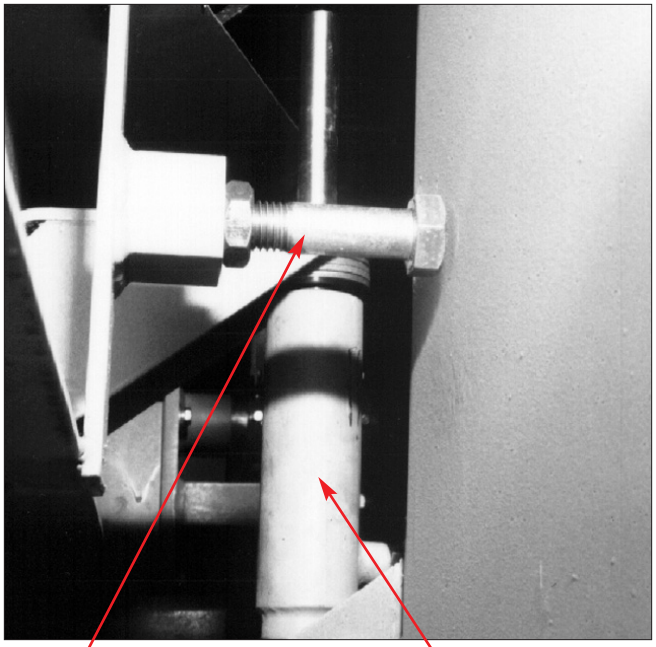
   c. With the pistons of the conveyor lift cylinders (Figure SP-20) retracted, remove the snap ring at the bottom of each cylinder, and remove both cylinders.

   d. Add or remove an equal number of shim washers at the rod end of each cylinder. An equal number is used to maintain conveyor squareness.

   e. Install the cylinders and snap rings.

   f. Unblock and lower the conveyor.

   g. Repeat the clearance checking procedure.



Left Side Of Conveyor
Figure SP-20

REPLACING CONVEYOR BELT

⚠ WARNING
DO NOT work under or around a raised hopper.

In preparation for replacement of the conveyor belt, the sweeper must be **parked on a flat, level surface**.

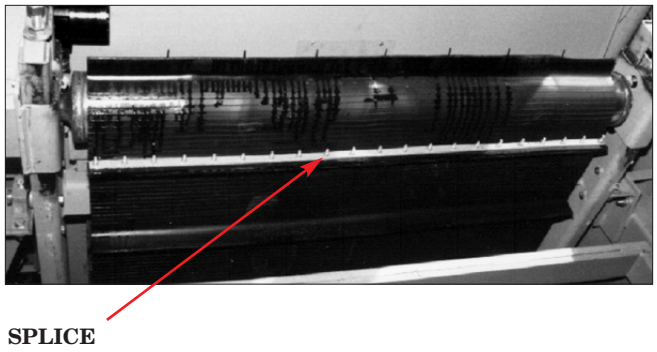
Before beginning replacement of the belt, **follow the procedure** under Conveyor Access.

Removing Conveyor Belt

Before the conveyor belt is removed or installed, the main broom must be removed by the procedure under Main Broom Replacement.

With the main broom removed, use the following procedure to remove the belt..

1. Raise the conveyor to transport position.
2. Rotate the conveyor belt to expose the belt splice at the upper conveyor roll area (Figure SP-21).
3. Loosen the jam nuts and back them off the adjusting nuts on both sides of the conveyor (Figure SP-17).
4. Turn the adjusting nuts to reduce overall belt tension on both sides of the belt.



Conveyor Belt
Figure SP-21

5. Disassemble the belt splice and allow the belt to fall beneath the sweeper.

6. Remove the belt from under the sweeper.

Squaring Conveyor Structure

The conveyor structure should be checked and adjusted for squareness in the sweeper and to the sweeping surface. Use the following procedure.

1. On the conveyor structure, select a reference point (e.g., a bolt or bracket) that is common to both sides.

2. Measure the distance from each reference point to the surface on which the sweeper is standing.

3. If the two measurements do not closely match, square the conveyor structure by taking the following steps.

   a. Raise the conveyor.

   b. Block and support the conveyor.

   c. With the pistons of the conveyor lift cylinders (Figure SP-20) retracted, remove the snap ring at the bottom of the appropriate cylinder, and remove the cylinder.

   d. Add one or more shim washers at the rod end of the cylinder.

   e. Install the cylinder and snap ring.

   f. Unblock and lower the conveyor.

   g. Repeat the measurement procedure and, if necessary, repeat the adjustment procedure until the conveyor structure is squared.

NOTICE

To achieve squareness, the number of washers on the two cylinders will generally be different. When ground clearance is adjusted, this difference should be maintained throughout the adjustment. See CONVEYOR GROUND CLEARANCE.

Structure Stop Bolt Adjustment

Above the conveyor lift cylinders, there are two stop bolts (Figure SP-20) that guide the conveyor in tow through U-turns and sweeping, preventing damage to the conveyor and other components under the sweeper. There should be a 1/8-inch (3 mm) gap between these bolts and the sweeper side plates. The bolts should not ride against the side plates.

Lower Roll Offset Adjustment

Lower roll offset is needed to compensate belt tension for the material "loading" effect that occurs on the right side of the conveyor during standard right-hand sweeping.

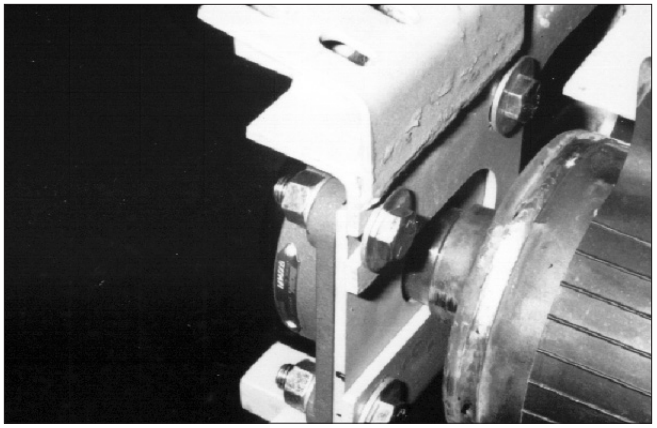
The offset is adjusted at the factory and normally needs little or no readjustment, but it should be checked with every new belt installation. Offset may be out of adjustment for a machine in the field due to wear and loosening of the lower roll bearings and conveyor lift cylinders. Adjusting the offset can make conveyor belt installation easier or help solve alignment ("training") difficulties. See CONVEYOR BELT ADJUSTMENT.

NOTICE

Reference to right- or left-hand in the following procedure is based on the operator's seated position facing forward in the sweeper.

1. With the belt removed or belt tension released, check the **left-hand** lower roll bearing (Figure SP-22). The lower edge of the bearing casting should be flush with the end of the conveyor weldment. If necessary, adjust the position of the bearing.

2. Check the **right-hand** lower roll bearing (Figure SP-23). The lower edge of the bearing casting should be approximately one-half inch (13 mm) up from the end of the conveyor weldment.



Left Hand Lower Roll Bearing
Figure SP-22

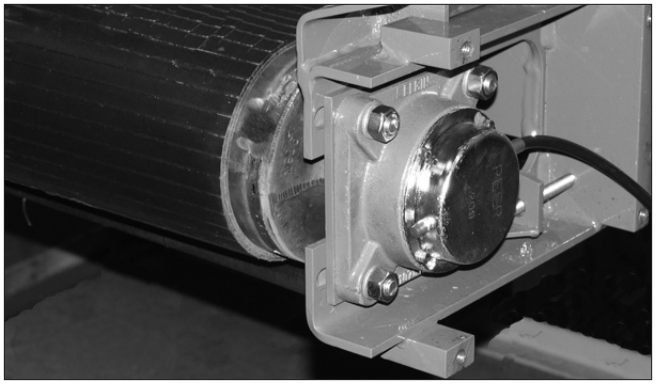


Figure SP-23
Right-Hand Lower Roll Bearing

NOTICE

These settings may require slight readjustment, similar to adjustment of the upper roll, during belt tensioning and alignment. See CONVEYOR BELT ADJUSTMENT.

Installing Conveyor Belt

NOTICE

If the lower roll offset is properly adjusted before a new belt is installed, belt adjustment is easier. Proper offset can also help solve problems of alignment ("training") with a belt that has been in use. See Lower Roll Offset Adjustment.

To install a conveyor belt, use the following procedure.

1. Lower one end of the conveyer belt (cleats out) past the upper roll and down through the underside of the conveyor to the lower roll.

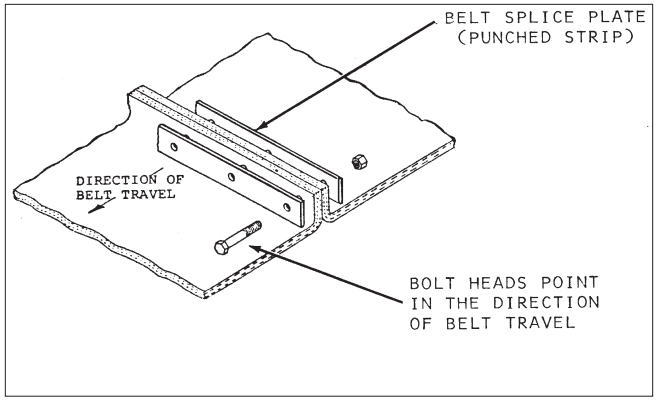
2. Loop the other end of the belt over the upper roll and feed it downward.

3. Position the entire belt as close to the center of each roller as possible. The belt edges should run parallel to the conveyor belt guide plates.

4. From a position under the machine at the lower roll, gather both ends of the belt, and install the belt splice as if you were closing a zipper (Figure SP-24).

NOTICE

Mounting bolt heads in the splice should face the direction of normal belt travel.



Belt Splice Installation
Figure SP-24

SPLICING CONVEYOR BELT

To remove a conveyor belt for repair or to install a repaired belt, see the precautions and instructions under Replacing Conveyor Belt.

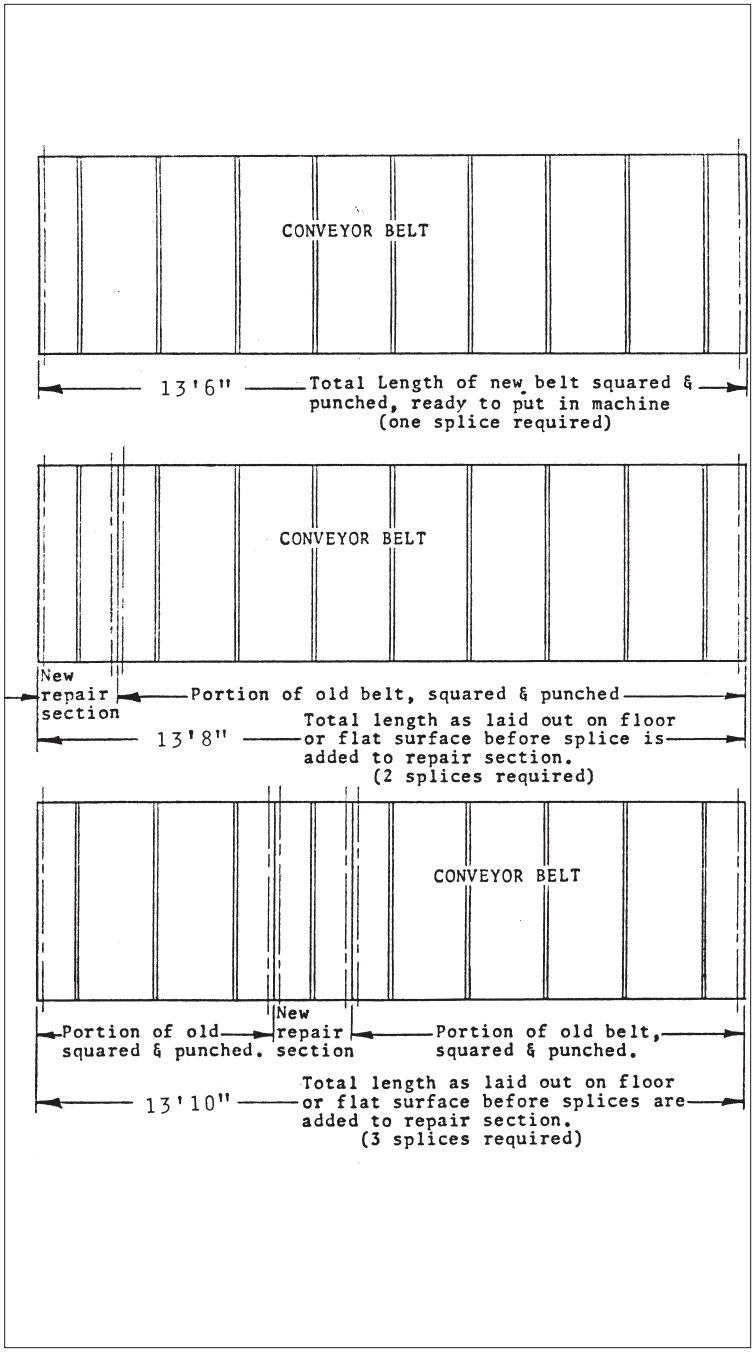
A torn or damaged belt may be repaired in the field by cutting out the damaged part with a squared cut across the whole width of the belt and inserting a new section also squared off to match the length of the part removed (Figure SP-25). This requires two splices, one at each end of the new belt section added. Should damage occur near the original splice, the new section may be added at the end and only one splice need be added.

REVERSING CONVEYOR

The conveyor assembly and belt adjustments are designed to train the belt in forward (sweeping) motion only. The reversing feature is only for the purpose of relieving any condition which has caused a jamming effect of the belt or driving mechanism and normally will not be prolonged over a period of 30 seconds. Longer periods of time may cause the belt to run either to the extreme right or left, causing damage to the belt.

NOTICE

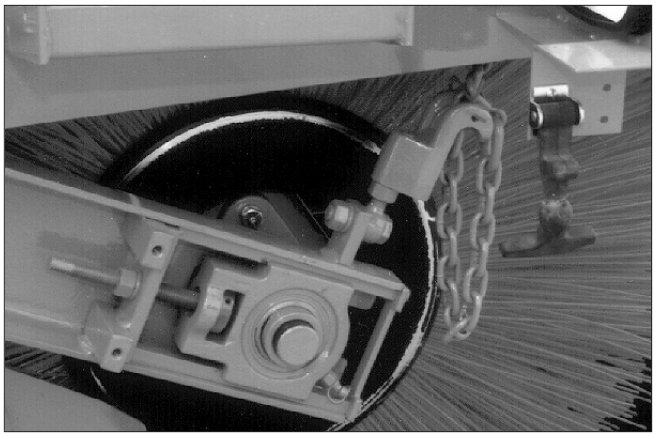
Do not *operate conveyor in reverse for more than 30 seconds without allowing forward motion to center belt. Excessive reverse running can damage conveyor belt.*


CONVEYOR BELT
13'6"
Total Length of new belt squared & punched, ready to put in machine (one splice required)
CONVEYOR BELT
New repair section
Portion of old belt, squared & punched
13'8"
Total length as laid out on floor or flat surface before splice is added to repair section. (2 splices required)
CONVEYOR BELT
Portion of old squared & punched.
New repair section
Portion of old belt, squared & punched.
13'10"
Total length as laid out on floor or flat surface before splices are added to repair section. (3 splices required)

Belt Repairs
Figure SP-25

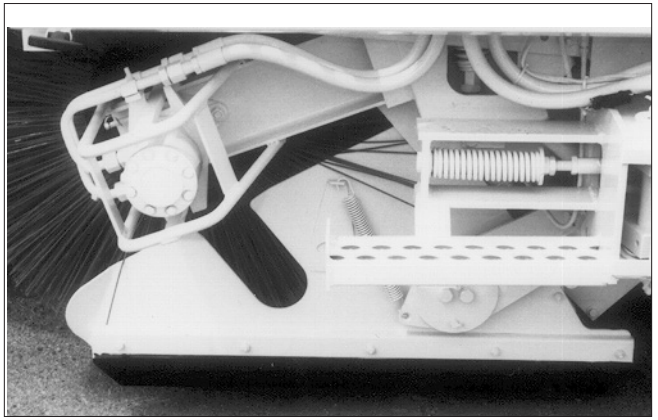
MAIN BROOM REPLACEMENT

To prepare for the removal of the main broom on a Pelican with **standard (chain) broom suspension** (Figure SP-26), raise the main broom and release the suspension chains on both sides of the machine.



Main Broom Chain Suspension
Figure SP-26

To prepare for removal of the main broom on a Pelican with **hydraulic broom suspension** (Figure SP-27), lower the broom to just touch the ground. This will properly balance and suspend the main broom, making disassembly of the left-hand lower broom arm easier. (If the broom goes down too far, raise it all the way up and lower it again.)



Hydraulic Main Broom Suspension
Figure SP-27

Then follow this procedure:

1. Turn the steering wheel all the way to the left. This will allow room to handle the main broom.

⚠ WARNING

Contact with rotating main broom can cause personal injury or property damage. Turn broom(s) and engine off before inspecting or servicing broom.

2. Shut down the engine.

3. Remove the three main broom drive hub mounting bolts from the broom core on the **right side** of the machine.

4. Remove the main broom lower arm mounting bolts from the **left-hand** upper main broom arm.

5. Pull the main broom (with lower arm attached) out from under the left side of the sweeper and set aside.

6. Remove the main broom from the lower arm.

7. Install a new main broom on the lower arm.

8. Place the new main broom and lower arm under the left side of the sweeper.

9. Install the main broom lower arm mounting bolts on the left upper main broom arm.

10. Install the three main broom drive hub mounting bolts on the broom core on the right side of the machine.

CAB AIR FILTER

Clean air for the heater, air conditioner and cab pressurizer is drawn through a filter. This filter should be checked and replaced on a regular basis. The exact frequency will depend on operating conditions.

WHEELS AND TIRES

Jack pads are provided behind the front drive wheels on both sides of the Pelican. A bottle jack can be used with these jack pads to lift the front of the sweeper for tire changing.

NOTICE

Do not use the chassis of the sweeper when jacking it up. Always use the jack pads.

To change a rear guide wheel, use a small bottle jack between the two guide wheel tires to lift the sweeper.

NOTICE

Always use matching tires on the guide wheel. Use of non-matching tires may result in uneven wear or cause one tire to carry the entire weight.

WINTER STORAGE

To prepare the sweeper for seasonal or other long-term storage, take the following steps.

1. Empty the hopper and thoroughly wash down the sweeper.

2. Fill the fuel tank to minimize condensation of moisture.

⚠ CAUTION

Battery gas can explode. Keep sparks and flames away from batteries. If the battery electrolyte level must be checked, use an electric

light. Never check battery charge by placing a metal object across the posts. Use a voltmeter or hydrometer. Always remove the grounded (—) battery cable first and connect it last.

3. Remove and clean the battery . Store in a cool, dry place and keep fully charged. This action will keep the battery in good condition.

4. Clean the exterior of the equipment and touch-up any scratched or chipped painted surfaces.

5. Coat all exposed metal surfaces with grease or corrosion inhibitor.

If the sweeper must be stored at temperatures below freezing, also take the following steps to prevent damage.

1. Make sure that the cooling system of the engine has the correct antifreeze in a concentration adequate to prevent freezing. See the service manual from the engine manufacturer for coolant system information.

2. Drain the fuel water separator.

3. For the spray water system, take the following steps.

   a. Open the water tank drain.

   b. Open the spray water shutoff valve and remove the water filter.

   c. Empty the filter body and store it in the cab.

   d. Open all spray water valves, and operate the water pump for 5 to 10 seconds to empty the pump and water lines.

4. If water is being used instead of solvent in the windshield washer, drain the washer solvent bottle.

Follow all recommendations of the engine manufacturer for cold weather storage. Whenever the engine is to be stored for several months or more,

take the following steps to minimize corrosion and deterioration.

1. Change engine oil and replace the oil filter. Used oil will not give adequate protection.

2. Drain and flush the cooling system only if the engine will be stored for a year or more.

3. Loosen all belts to relieve tension. Remove the belts, if desired.

4. Seal all openings on the engine with plastic bags and tape.

SPRING STARTUP

Follow all directions of the engine manufacturer for startup of equipment.

1. Remove all protective coverings, including those on the engine and electrical systems.

⚠ CAUTION

Battery gas can explode. Keep sparks and flames away from batteries. If the battery electrolyte level must be checked, use an electric light. Never check battery charge by placing a metal object across the posts. Use a voltmeter or hydrometer. Always remove the grounded (—) battery cable first and connect it last.

2. Inspect the belts, and replace them, if they show cracks, stretching or fraying. If the belts were removed, install them. Adjust the belts to their proper tension.

3. If necessary, fill the engine cooling system.

4. For the spray water system, take the following steps.

   a. Close the shutoff valve and install the filter.

   b. Close the water tank drain.

c. At the water pump, take the following steps.

   1) Remove the plug at the top of the pump.
   2) Fill the pump t o overflowing with water.
   3) Install the plug.

5. Install a fully-charged battery, and connect the cables.

6. Follow all instructions in the Startup Checklist at the beginning of the Operation section.

NOTES:

TROUBLESHOOTING

More complete troubleshooting and service procedures may be found in the Service Manual for the Pelican P. The troubleshooting listed below is meant as a general guide only.

Conveyor jammed
Reverse the conveyor for no more than 30 seconds at a time to dislodge large objects from the conveyor.

Machine running too hot
The thermostat in the hydraulic thermal bypass may be defective.

Backup alarm does not sound
Check continuity in switch. Spool will stick if debris gets into it.

Noise in flywheel housing
This noise signals the beginning of failure of the flex plate in the engine-pump coupling.

Steering problems
Guide wheel may be loose, tires uneven or there may be an hydraulic leak.

Brake problems
See Troubleshooting Guide, Service Manual - Brake System Section.

Broom(s) wearing too quickly
Decrease down pressure.

Broom(s) rotating too slowly
Decrease down pressure.

Debris thrown back into gutter
Broom angle set too flat, adjust angle.

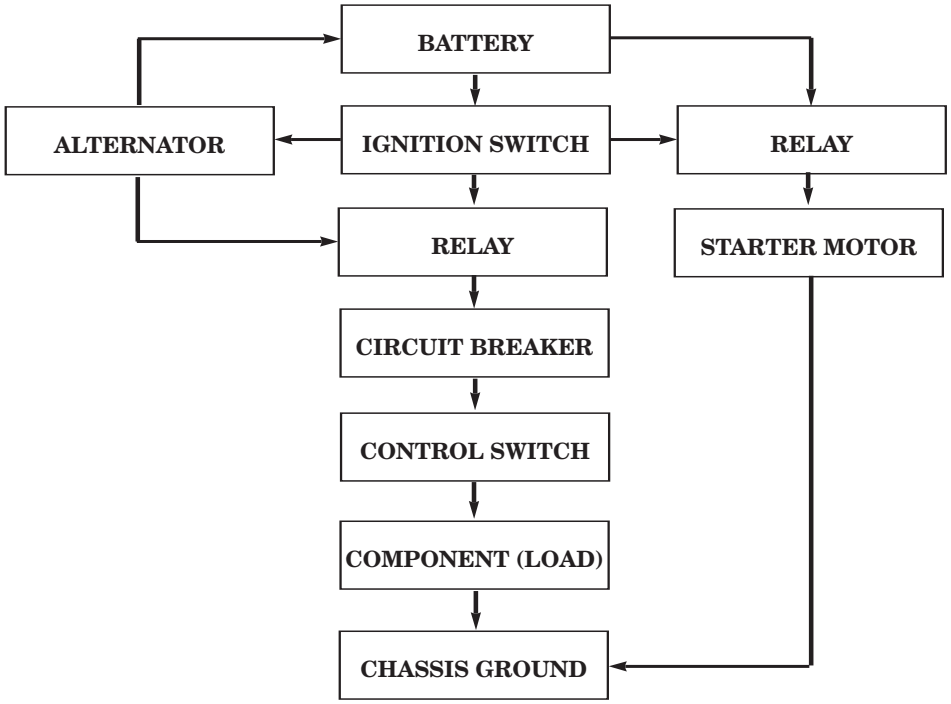
Excessive dust
Not enough water. Check spray nozzles for clogs; check water supply level.

Hydraulic main or side broom(s) will not rise
Spool in solenoid valve may be stuck or there may be an open electric circuit. If Hydraulic Filter Restriction Indicator (#29, Figure O-1) is on, there may be debris in the oil line.

Hydraulic main or side broom(s) will not lower
Spool in solenoid valve may be stuck or there may be an open electric circuit. If Hydraulic Filter Restriction Indicator (#29, Figure O-1) is on, there may be debris in the oil line.

Hydraulic main or side broom(s) will not rotate
Spool in solenoid valve may be stuck or there may be an open electric circuit. If Hydraulic Filter Restriction Indicator (#29, Figure O-1) is on, there may be debris in the oil line.

TROUBLESHOOTING — Electrical System



GLOSSARY

Broom pattern - Marks intentionally made on the pavement by the brooms when rotating the brooms with the sweeper staying in one place. The broom pattern is used to determine that the brooms are making proper contact with the street.

Bubble window - A high visibility window on the Pelican cab door that allows the operator to look out and down at the curb.

Conveyor - Device that carries debris swept up by the main broom to the hopper. The Pelican P patented No-Jam® conveyor has molded-in, full width cleats to move large debris without jamming.

Dirt deflectors - Rubber pieces mounted under the chassis to keep debris within the sweeping path.

Dirt shoes - Rubber and metal devices outboard of both ends of the main broom, used to keep debris between the main broom and conveyor.

Drive wheels - The front wheels of the Pelican. These wheels power forward and reverse motion of the Pelican.

Guide wheel - The rear wheel of the Pelican. This wheel, which has two tires, steers the Pelican, allowing the sweeper to sweep extremely close to obstacles and to make tight turns around parked cars. (Also see Sprung Guide Wheel)

Hopper - An on-board tank for holding debris that has been swept up.

Hopper door - A large door that opens when the hopper is raised to allow debris to be emptied from the hopper.

Limb guard - An optional heavy-duty guard used to direct low tree branches up and over the sweeper cab.

Main broom - A long cylindrical broom running under the sweeper, used to direct debris onto the conveyor. May be suspended by chains or an optional hydraulic suspension system.

Side broom - Horizontally rotating broom used to direct debris from the gutter to the main broom.

Spray water - Water sprayed on debris being picked up by the sweeper. This water reduces the amount of dust.

Sprung guide wheel - Optional suspension system on the guide wheel. The 4-spring design absorbs shock, reducing wear and tear on the operator and the sweeper.

Taper - The difference in size of the broom pattern from one end of the main broom to the other end. There should be no taper if the main broom is properly adjusted.

Torque hub - A planetary hub on the drive wheels.

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